DEC 27 1937

NEWS ISSUE

ELECTRICAL WORLD

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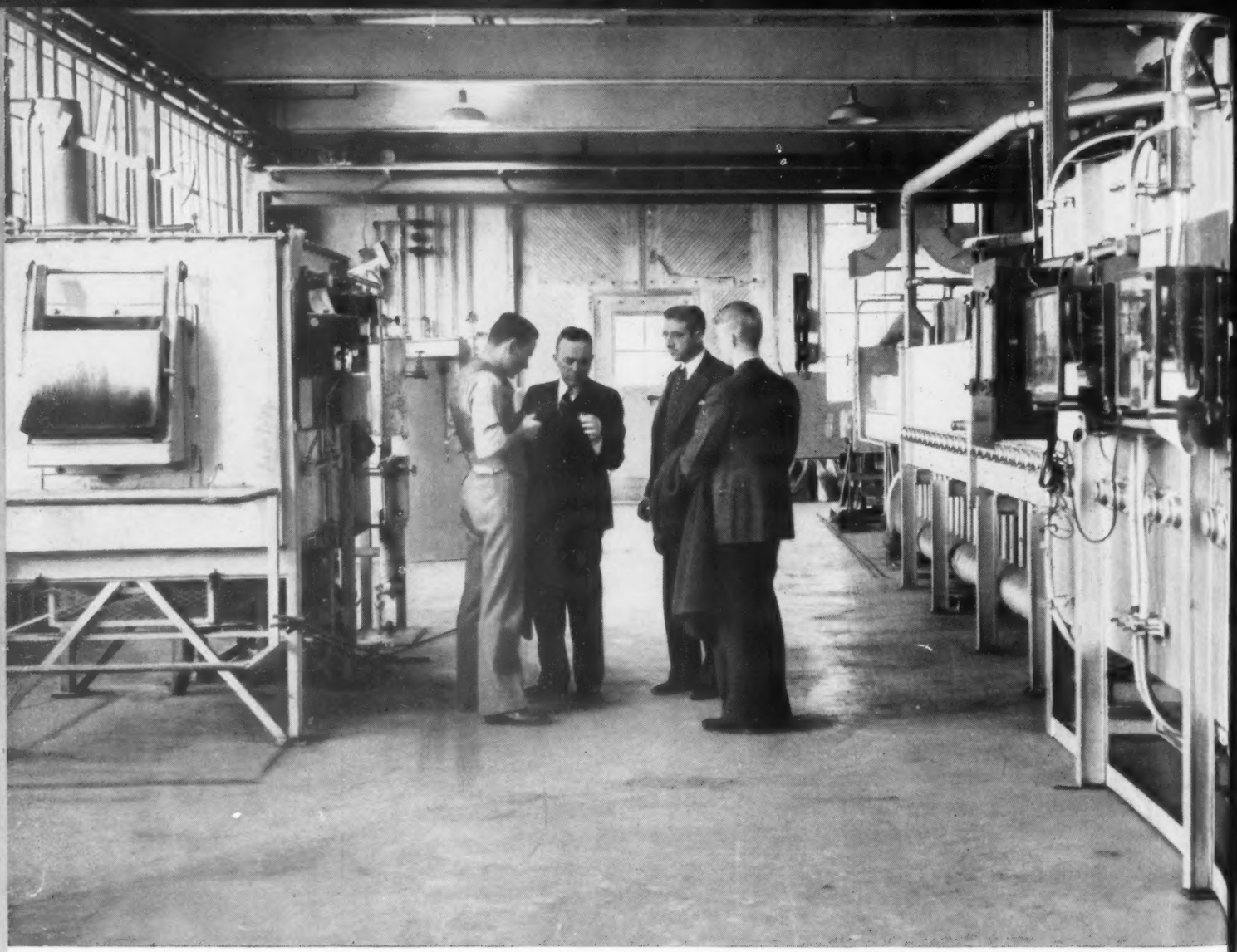
CHARLES E. WILSON

Who recently was elected to the newly created position of executive vice-president of General Electric Company

TWO PARTS
PART I

DECEMBER 25
1937



TURNING HEAT INTO KILOWATT-HOURS

ON the average power system, the industrial-motor load is about 12 times the industrial-heating load. It is, therefore, highly significant that in our Schenectady Works, the heating load is about *equal* to the motor load. Furthermore, every use we have made of electric heat has resulted in a better product at a lower over-all cost. In every case it has paid so well that we now have excess boiler capacity from equipment originally installed to furnish steam heat.

For the industrial, electric heat is profitable almost beyond belief. We are demonstrating its advantages to manufacturers day after day—week after week—in our new industrial-heating laboratory illustrated above. They are returning to their plants with samples of their own product heat-treated *the electric way*. And the result is turning heat into kilowatt-hours—adding to the 500,000 kw of G-E industrial-heating equipment connected to central-station lines during the last five years. (Estimated annual revenue, $12,000,000.)

This business of turning heat into kilowatt-hours is fully expressed by General Electric—in our factories and laboratories, in our advertising and sales, and in our co-operative demonstrations. That is because we believe that the development of electric heat is essential to the future of the electrical industry. And, of course, our work is made possible through your continued purchases of all types of General Electric equipment.

GENERAL ELECTRIC

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News Issue

ELECTRICAL WORLD

VOLUME 108 DECEMBER 25, 1937 NUMBER 26

General Electric Appoints Wilson to Executive Vice-President Post

Former office boy tops outstanding career in newly created position — Swope announced Reed will be assistant to president — Business of company seen at highest level since boom era of 1929

An important change in the organization of General Electric Company was made last week with the announcement by President Gerard Swope of the appointment of Charles E. Wilson of Bridgeport, Conn., a former office boy, to the newly created position of executive vice-president.

At the same time Mr. Swope announced the appointment of Philip D. Reed of Larchmont, N. Y., as assistant to the president. Mr. Reed entered the employ of General Electric in 1926 and since 1934 has been general counsel of the lamp department with offices in New York.

His outstanding career

A go-getter when it comes to merchandising electrical appliances, Mr. Wilson brings to his new assignment a broad experience gained in the industry since he joined the Sprague Electric Company in 1899. At 51 Mr. Wilson, a native New Yorker, tops an outstanding career in the electrical industry.

Rising from office boy, production manager and sales manager with the Sprague organization, Mr. Wilson became assistant general superintendent of the Maspeth and New Kensington Works when the company was transferred in 1918 to General Electric. In 1923 he went to Bridgeport as managing engineer in charge of the conduit and wire business. He was appointed assistant manager two years later.

Since 1935 Mr. Wilson has directed all appliance activities as well as air-conditioning equipment. Early in 1930 he was appointed manager of the merchandise department in charge of engineering, manufacturing and sales. In December he was elected vice-president and was one of the original members of the newly formed appliance sales committee of the company.

Mr. Wilson is board chairman of the General Electric Contracts Corporation, the Monowatt Electric Corporation of Providence, the Electric Vacuum Cleaner Company of Cleveland, and Houses, Inc. He is a director of Edison General Electric Appliance Company, Chicago; Trumbull Electric Company, Plainville, Conn., and G. E. Supply Corporation, New York.

Business near 1929 peak

Business of General Electric Company this year is expected to reach the highest level since 1929. The heavy purchases of utilities, which began during the late summer of 1936, carried through the second quarter this year. There was a drop in orders during the third quarter, which has continued so far in the fourth. However, with orders billed of $305,276,556 during the first nine months, the total for the year is expected to be the highest since 1929.

Sales billed for the first nine months totaled $260,773,533, as against $199,263,156 for the same 1936 period. During the fourth quarter delivery schedules have been well maintained, which indicates a high total for the entire year.

The slowing down in orders during the fourth quarter has enabled the company to clear away much of the backlog of business and place it in a position to meet demands for quick deliveries in the new year. Construction budgets of utilities for 1938 indicate that a sizeable amount of heavy equipment will be purchased. The emphasis placed on load building by the utilities will mean good appliance business for electrical manufacturers.

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Electrical Jubilee Is Sales Stimulus

Sale of electrical appliances for Christmas was given a definite stimulus by a series of electrical expositions recently staged in Colorado, Wyoming, New Mexico, Utah, Montana, South Dakota and western Nebraska by the Rocky Mountain Electrical League. Estimated attendance was 50,000.

A survey following the Electrical Jubilee in Denver, which attracted 11,000 people during its four days in spite of sub-zero weather the first two,

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showed that many retailers were out of stock on the equipment emphasized at the various expositions and that distributors and wholesalers' agents had reordered from factories to replenish supplies.

Newspaper and radio publicity, "Give Something Electrical for Christmas" stickers, truck and store display banners and broadsides and personal letters helped emphasize the shows. Success of the enterprise is attributed largely to the retiring president of the league, Guy W. Faller, who is to be succeeded by J. H. Jacobucci.

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Utility Salesmen to Compete In Electric Range Contest

To give additional impetus in 1938 to the swing to electric cooking, R. B. Marshall, president of Electromaster, Inc., Detroit, has offered cash prizes totaling $500 in a competition open to retail salesmen of operating utility companies. The contest will be conducted under auspices of the Edison Electric Institute and prizes will be awarded at the annual convention in 1939, to be held at the World's Fair in New York.

The $500 will be distributed as awards of $100 each to operating utility retail salesmen who sell, lease or rent for their companies in 1938 the largest number of domestic electric ranges of seven kilowatts or more.

Commission Denies Building Cost Items

In two orders made public recently the Federal Power Commission made its final determination of the actual legitimate original cost of the Ohio Falls station of the Louisville Gas & Electric Company and denied the company's petition filed May 1, 1937, for reconsideration of certain items of claimed cost which were disallowed in the commission's opinion dated October 31, 1933.

Following the issuance of the 1933 opinion, which fixed the cost of the project at $6,996,093 as of November 30, 1929, the company requested and was granted rehearing on certain disallowed items. At the rehearing held January 6, 1937, the company claimed as project cost $481,533 alleged to have been expended for engineering fees, $8,956 for still photographs, airplane photographs and motion pictures of the project and $9,576 for rental charges for the use of non-project land during the construction period.

In its recent order the commission has disallowed $277 809 of the amount claimed as engineering fees, $3,800 of the amount claimed for the various forms of photography and the entire amount claimed as rental charges for the use of non-project lands. The sum of $13,215 is allowed as interest during construction on those portions of the engineering fees and amounts expended for pictures that were determined as project cost.

Ohio Falls station is reported to have a present installed capacity of 108,000 hp. and an ultimate installed capacity of 135,000 hp.

•

Utilities Complete REA Rate Reductions

Two more of the major utility companies in South Carolina have made reductions in rural power rates, according to an announcement by the Public Service Commission. The reduction embraces rates of the South Carolina Electric & Gas Company and the South Carolina Power Company. Previously, Duke Power Company and the Carolina Power & Light Company had made cuts in charges to REA.

Under the new schedule the rural rate of South Carolina Electric & Gas to REA will be 1.40c. a kilowatt-hour, as compared with the 1.45c. previously charged. South Carolina Power Company's rate will be 1.45c. a kilowatt-hour. This company has only four lines of about 91 miles in its system in this state, L. W. Pollard, director of the commission's electrical utilities division, stated. The fact that usage is so light and the lines so scattered, led the commission to believe a rate a little above that of the other companies was justified.

The reductions completed the program of the commission in seeking reductions in rates for REA projects from the four major utility companies in the state.

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Coast Workers Defeat CIO

Employees of Pacific Gas & Electric turned down the plea of the CIO as their bargaining agency, voting 3,550 to 2,254 for their own organization, the Independent California Gas & Electric Employees' Union. The CIO union—the United Electrical, Radio and Machine Workers—immediately protested the vote, filing charges of "coercion."

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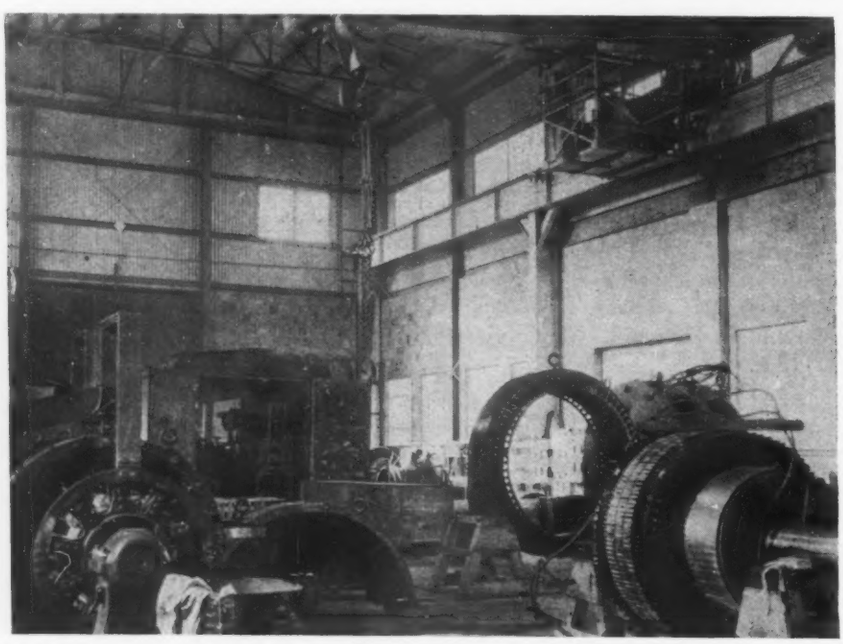
Providence Utility Expands

Narragansett Electric Company has purchased the land and buildings on the southerly side of Point Street, Providence, R. I., at a cost of approximately $237,000.



PLANT ADDITION—This most recent addition to the electrical shop of the Hanson-Van Winkle-Munning Company, Matawan, N. J., adds about 4,000 sq.ft. of floor space. The new 60-ton crane has been added for loading and unloading heavy equipment

Regional Planning to Be Changed as Opposition to Measure Grows

Rocky Mountain group says "little TVA" power bill would strip states of their authority over water rights — Governor Aiken denounces proposal before House Committee — Roosevelt for planning only now

Opposition to the proposed regional planning legislation which would create seven "little TVA's" has broadened on several fronts of late as the House rivers and harbors committee proceeds with its hearings.

Latest to express disfavor with the plan proposed by Representative Mansfield, Dem., Texas, were representatives of seven states making up the so-called Rocky Mountain group. The members took the position that the bill would strip the states of their authority over water rights. The states represented were Montana, Wyoming, Nevada, Utah, Colorado, Arizona and New Mexico.

Gov. Aiken against plan

Gov. George D. Aiken of Vermont voiced New England's opposition to the bill when he appeared before the House committee. Denouncing the proposal to create seven federal regional agencies modeled on the Tennessee Valley Authority, Governor Aiken declared the bill itself to be confusing and misleading. He attacked the underlying principle of increasing federal supervision over fields heretofore left to the individual states. He said that this would tend to wipe out the states' control over their own resources.

"The outline of regions, which seems to be one of the intents of the bill, will tend to break up state unity," Governor Aiken told the House committee.

"The destruction of a balance of power between the states and the national government is not a good thing for America.

"If this bill becomes law and it is enforced uniformly throughout the country it will mean the permanent shutdown of many industries."

Governor Aiken explained that Vermont objected to the measure, or any like it, "for the reason that we are a self-supporting state, living strictly within our means and on a nicely balanced budget."

Col. Robert Isham Randolph, engineer and civic leader, representing the Chicago Association of Commerce, sharply assailed the "little TVA" bill as proposing to put the United States in the power business. He said that the objective of the bill to co-ordinate the work of existing agencies in the conservation field was commendable, but that purpose cannot be accomplished by dividing up the country into arbitrary districts administered by co-equal and competing planning agencies.

It was contended by Col. Randolph that the TVA experiment has been an expensive procedure in flood control, and as for creating a market for its power, there was question. He estimated that the ultimate TVA project will cost more than $500,000,000, of which approximately $400,000,000 must be charged to power.

The strong opposition to the "little TVA" regional bill has forced the Administration to bend toward rewriting the measure, which would contain only planning and no power provisions.

"As I understand the President's ideas," Chairman Mansfield said, "he doesn't want any hydro-electric power authority in it except the Columbia River Authority."

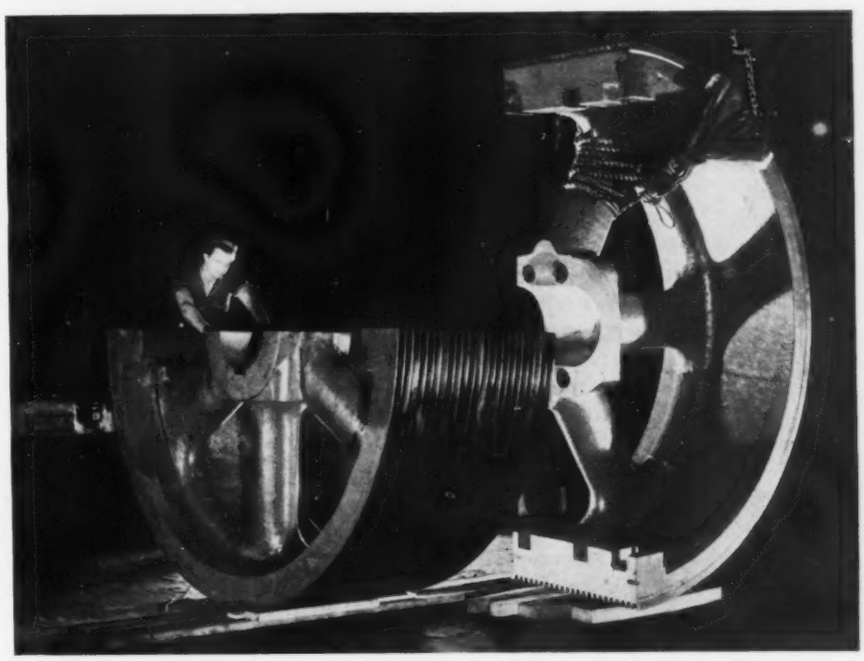
•

Kitchen Bureau Has New Promotion Plan

The National Kitchen Bureau plans to spend upward of $350,000 in a comprehensive sales and advertising campaign to promote the sales of electric ranges, refrigerators and water heaters.

In connection with the electric range activity, the bureau plans to inaugurate a National Electric Range Spring Showing, with the idea of accomplishing, in this field, something of the same results achieved by automobile shows. In its refrigeration promotion it intends to extend a test advertising campaign which proved successful in Dallas and Oklahoma City in the fall of 1937.

Electric water heater promotion will involve five contests. Four of these will offer individual cash awards totaling more than $2,000 and one will offer a cup and a national $1,000 prize to the utility doing the "best all-around electric water heater job in 1938."



FOR JAW CRUSHER—This sheave, more than 10 ft. in diameter, is part of the drive for a 300-hp., 250-r.p.m. motor to a stone crusher in construction in the Allis-Chalmers Manufacturing Company shop

Premier Hepburn Says U.S. Blocks Export of Surplus Electric Power

Charges pressure to force approval of St. Lawrence Seaway and power plan — Prime Minister King denies charges that failure to agree to Roosevelt plan would result in retaliation with trade barriers

Charges that Washington pressure was being exerted to force Ontario to agree to the Roosevelt plan for the St. Lawrence waterway and power development were made this week by Premier Mitchell Hepburn as the dispute between the Premier and Prime Minister Mackenzie King took on a bitter angle.

President Roosevelt's name was drawn into the controversy when Premier Hepburn charged that a "made-in-Washington plan" was responsible for the present inability of the province to dispose of its excess power to the United States.

Hepburn charges plot

It was also charged by Premier Hepburn that the American and Canadian governments were plotting to embarrass and force the Ontario Government to approve the St. Lawrence project. It was suggested that an agreement had been reached between Ottawa and Washington whereby Ontario would not be allowed to divert more water at Niagara Falls until Ontario became a party to the St. Lawrence pact.

Prime Minister King denied Premier Hepburn's charges that he had said that unless President Roosevelt's "request" was acceded to Mr. Roosevelt "might retaliate with trade barriers."

As the dispute took on new angles, Prime Minister King refused to accept Premier Hepburn's challenge to publish "confidential" correspondence relating to the St. Lawrence project and the Ontario Hydro-Electric Commission's Lake Superior power development project.

The request of Ontario to export surplus power to the United States was refused on the basis, as the Prime Minister said, of the recorded opinions of members of the House of Commons against such exports. Mr. Hepburn criticised the decision and said that the "western and extreme eastern provinces are not concerned with the matter that relates wholly to Ontario and Quebec. By the time this matter comes before Parliament for debate the peak consumption period will have passed and we might not be able to make the contracts with the United States companies which we can make now at a profit."

Premier Hepburn declared that on the occasion of Prime Minister King's "visit to President Roosevelt last spring he stopped off en route and spent an hour in my office in a futile effort to persuade me to accede to the Roosevelt request regarding proceeding with the St. Lawrence project. King intimated to me that unless we did Roosevelt might retaliate with trade barriers."

It was stated by Premier Hepburn that after the conference he discussed the matter with the Cabinet and "we agreed not to budge from our position that the St. Lawrence development could not be economically justified at the present time."

The situation has developed to the point where, observers declare, the whole matter of the St. Lawrence project will be aired before Parliament when it meets January 27.

•

Commission Assails New Financing Plan

Application by the Mountain States Power Company, a Standard Gas & Electric subsidiary, for authority to issue $8,000,000 of 6 per cent first-mortgage bonds and $700,000 of unsecured serial notes to refund indebtedness has been denied by the Federal Power Commission.

The order stated that the plan of refunding was "conceived at the last moment, under most unfavorable conditions, involving excessive costs and expenses," and that it was in effect "merely a temporary avoidance of the frank facing and thoroughgoing solution of applicant's financial problems."

The commission said it did not "have jurisdiction to order such thoroughgoing reorganization of the applicant's securities and accounts as would be required to place applicant's operations on a sound financial basis," and added that "such jurisdiction is vested in the district courts of the United States under Section 77b of the National Bankruptcy Act, and the cost of reorganization under Section 77b will be much less than the expense under the plan now proposed."

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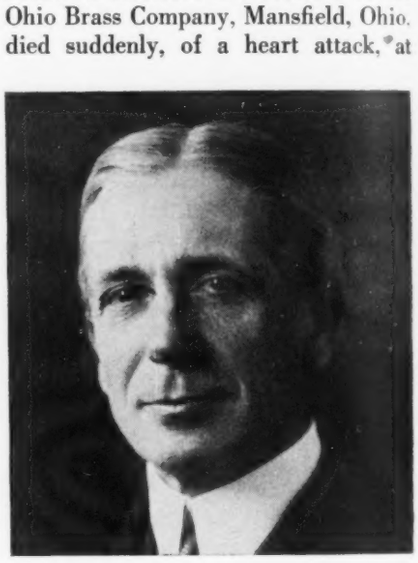
Frank B. Black Dies; Was Ohio Brass Head

Frank B. Black, chairman of the board of directors and founder of the Ohio Brass Company, Mansfield, Ohio, died suddenly, of a heart attack, at



his home in that city December 19. He was 72 years old.

A pioneer in the electrical manufacturing industry, Mr. Black organized the Ohio Brass Company in 1888 to produce brass valves and saddlery hardware. Soon after the business was established the company began the manufacture and sale of overhead equipment for street railways and mines and later added porcelain insulators for high-tension transmission lines. Under Mr. Black's guidance Ohio Brass grew steadily, until today plants are operating in Mansfield and Barberton, Ohio, and Niagara Falls, Canada.

He was a civic as well as an industrial figure. Besides his interest in several local banks he served several terms as president of the local Chamber of Commerce, Mansfield General Hospital and took an active and financial interest in the Tuberculosis Research Laboratory at Saranac Lake, New York.

D. C. Barnes Elected President of Utility

At a special meeting of the board of directors of the Engineers Public Service Company held this week Donald C. Barnes was elected president of the utility, succeeding Samuel B. Tuell, who resigned that position to take over the duties of vice-president, controller and a director of the company. Resignations of certain officers and directors identified with Stone & Webster, Inc., also were accepted.

Charles A. Stone, Edwin S. Webster, George O. Muhlfeld and Whitney Stone, all of whom are officers of Stone & Webster, resigned as directors of Engineers, and William E. Wood also resigned to become a vice-president of the Stone & Webster Service Corporation. The membership of the Engineers board, originally fifteen, has now been reduced to ten. R. N. Benjamin was elected as secretary of Engineers in place of William T. Crawford, who resigned to devote his entire attention to Stone & Webster, of which he is executive vice-president.

Stockholders of Stone & Webster, Inc., meeting recently at Wilmington, Del., approved the plan whereby in conformity with the objectives of the Public Utility Holding Company Act the corporation disposes of its controlling interest in public utility companies by distributing the major portion of its holdings in Engineers Public Service Company and Sierra Pacific Power Company pro rata to stockholders and trusteeing the remainder together with holdings in certain other public utility companies.

Upon consummation of this program Stone & Webster, Inc., will cease to be a holding company under the Public Utility Holding Company Act.

•

Agree to Review Decision Upholding Utility Unit Act

The Department of Justice stated this week that it will shortly file a memorandum with the United States Supreme Court agreeing to a review of the decison of the Circuit Court of Appeals, New York, upholding the utility holding company act.

The petition will declare that "although the government believes that the action of the Circuit Court was clearly correct, the government feels that a review of the proceedings by this court clearly is in the public interest.

PLAN NEW LIGHTING—On a recent visit to General Electric's Nela Park this group sought new ideas to incorporate in the lighting plans for the Consolidated Edison Company of New York building at the 1939 World's Fair. Left to right standing: Martin Dodge of Walter Durwin Teague, designers; H. S. Richardson of Meyer, Strong and Jones, electrical engineers; H. S. Sutton and Henry Obermeyer, of Consolidated Edison, and J. A. Fouilhoux of Harrison & Fouilhoux, architects. Seated: Clarence Law of Consolidated Edison; Walter Durwin Teague, designer, and C. M. Cutler, General Electric

Commission Delays Hearing on Platte Valley Project

Federal Power Commission has postponed until February 7 the hearing scheduled to be held in Washington on December 8 on matters involving the hydro-electric project of the Platte Valley Public Power and Irrigation District in Nebraska. The hearing has been enlarged to include consideration of a joint petition to intervene in the proceedings filed by the Platte Valley Water Users Association, the Cozad Ditch Company and the South Side Irrigation District.

The enlargement will give the joint petitioners an opportunity to present evidence in answer to a petition for intervention filed last May by the Central Nebraska Public Power and Irrigation District, which supported the commission's previous finding that the Platte Valley project was within the commission's jurisdiction.

•

Steam Plant for Paper Mill

Bathurst Power & Paper Company, Ltd., has completed a new high-pressure steam and power plant, which is now in full operation, supplying power to its mill at Bathurst, New Brunswick. The plant, utilizing steam at 650 lb. pressure, is said to be the highest pressure plant in the Canadian paper industry. According to R. L. Weldon, president, a production record of some 320 tons of its various products in 24 hours was made by the mill shortly after the start-up of the new plant.

•

Standard Gas Management Gives Terms of New Plan

Management of the Standard Gas & Electric Company has mailed copies of a plan of reorganization to security holders and also requested acceptance of the plan. This action followed a recent order by the U. S. District Court in Wilmington Del., permitting this utility holding concern to solicit acceptances to the latest amended plan for reorganization. The court ordered that a hearing be held on the plan in Wilmington on February 10.

Concurrently with the mailing of the plan, various protective committees which have been active for the last year in reorganization of the system issued a joint statement announcing approval of the latest plan. There are six protective committees involved and five are now in accord.

Restricts Foreign Securities Holding

SEC has announced the adoption of rules under the Holding Company Act designed, in part, to bring more fully under the supervision of the commission activities of foreign holding companies which may seek to acquire securities or assets of United States utility or holding companies. The changes are provided in amendments to Rules 3A5-1 and 9A2-3.

Until promulgation of the amended rules the foreign companies generally were exempt from registration and other obligations of the act if they did not hold as much as 10 per cent of any class of securities of a domestic utility company. Hereafter it will be necessary for the foreign company to obtain approval of the commission if the company seeks to acquire more than 5 per cent of such securities.

There have been recent indications that certain foreign holding companies have been acquiring or negotiating for the acquisition of securities of American utility holding companies or their subsidiaries. The commission has felt that it should be in a position to pass upon the question of public interest where such transactions are involved.

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Suit Filed Under SEC Act on Registration Statement

The initial suit brought under the 1933 securities act, on the clause permitting investors to sue for losses claimed to result from misleading statements or omissions of material facts in a registration statement, has been filed in the New York State Supreme Court. Twelve plaintiffs claim to have purchased class "A" preferred stock, optional dividend series of 1936, of the American Cities Power & Light Corporation in July, 1936, in reliance upon the accuracy of the registration statement. Subsequently they discovered, they assert, that some material facts were misstated and others omitted. The suit seeks to recover an aggregate of $40,000.

•

KYW Seeks 50,000 Watts

Westinghouse Electric & Manufacturing Company, owner and operator of Station KYW, Philadelphia, has applied to the Federal Communications Commission for permission to increase power from 10,000 to 50,000 watts and to erect new antenna towers at the transmitter. KYW is the Philadelphia outlet of the National Broadcasting Company's red network.

•

Public Ownership in Quebec Moves Step Nearer Actuality

Quebec took its first definite step toward public ownership recently with the naming of S. A. Beaulne, civil engineer of Montreal, and Marvin James Savers of Noranda to the National Electricity Syndicate, and the promise that the third member would be named shortly by Premier Duplessis.

The organization was created at the last session of the Legislature by virtue of a law entitled "An act to establish and assure state competition respecting hydro-electric resources." Head office of the syndicate will be in Quebec, its operations in the electoral counties of Abitibi, Temiscamingue, Lake St. John and Roberval, where the mining industry has brought the electricity problem to the forefront.

•

Power Project Bonds Sold

The last block of PWA bonds needed to complete Danville's (Va.) power project have been purchased by Halsey Stuart & Company, New York, for $251,965 at 2¾ per cent interest.

Meetings

Louisiana Engineering Society — Annual meeting, St. Charles Hotel, New Orleans, La., January 7-8. A. M. Hill, secretary-treasurer, 422 St. Charles Hotel, New Orleans.

American Engineering Council—Annual meeting, Mayflower Hotel, Washington, D. C., January 13-15. Frederick M. Feiker, executive secretary, 744 Jackson Place, Washington, D. C.

American Institute of Electrical Engineers—Winter convention, New York, N. Y., January 24-28. H. H. Henline, national secretary, 33 West 39th Street, New York, N. Y.

Canadian Electrical Association—Annual winter conference, Windsor Hotel, Montreal, Que., January 31-February 1.

National Electrical Manufacturers Association—Midwinter meeting, Waldorf-Astoria Hotel, New York, N. Y., February 7-12. W. J. Donald, managing director, 155 East 44th Street, New York.

Praises Employees' Group at Tampa Electric Company

Speaking on employer-employee relations, James E. Sheridan, president of the employers' association of the Tampa Electric Company, told the Rotary Club recently that no service interruption in the history of the company had ever been caused by labor trouble or other differences between the company and its employees.

Credit for this record, Mr. Sheridan said, is due largely to the existence and functioning of an employees' organization, which helped maintain cordial and friendly relations between the company and its workers.

•

Utilities' Merger Rejected

FPC has refused to approve transfer of Newport Electric Corporation properties to Citizens Utilities Company, charging that transfer proposed would not tend toward localized management or interconnection of facilities, but would result in direct ownership and operation of facilities in Vermont by a company with executive offices in Minnesota.

All of the capital stock of Newport Electric is owned by Citizens Utilities, which proposed to cancel the capital stock, assume the indebtedness, to liquidate and eliminate the Newport corporation and operate its facilities.

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TVA to Open Memphis Office

TVA will open a division office in Memphis shortly after January 1 as headquarters for electrical activities in west Tennessee and north Mississippi. Earl Wall, formerly west Tennessee district manager for TVA, who supervised the start of the rural electric cooperatives in west Tennessee, will be in charge of the new office.

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Quebec Power Calls Meeting

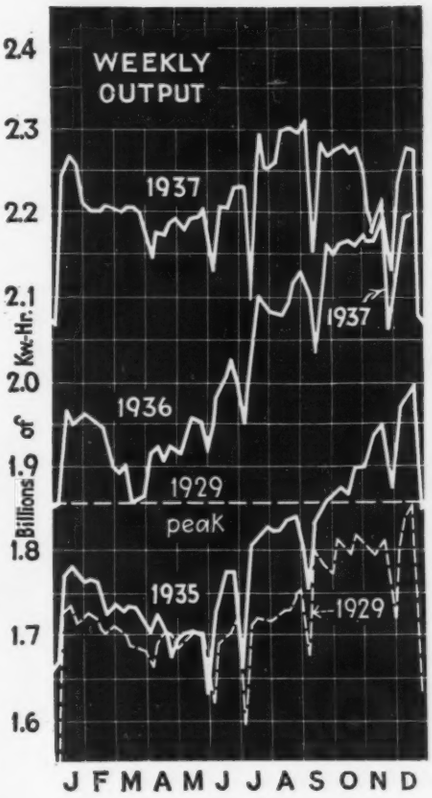
A special general meeting of shareholders of Quebec Power Company has been called for December 28 for the purpose of considering and, if deemed advisable, of approving a by-law enacted by directors for simplification of the company's balance sheet involving a reduction of capital. It is proposed to reduce the stated value of the common stock from $13,394,950 to $11,349,500 by writing off $2,045,450 of bond discount, premium, expense.

Output Remains Under 1936

Winter peak below last year's — But far above earlier ones — Falls short of summer level

In the week that normally culminates the year's operations with a new all-time peak, energy production this year fell nearly 120,000,000 kw.-hr. short of matching the output of the highest week of last summer, the new figure being 2,202,200,000 kw.-hr., against 2,320,982,000 kw.-hr. in the week of September 4, according to the Edison Electric Institute. It missed the production of the like period a year ago by 3.3 per cent, thereby registering the fourth consecutive deficiency compared with 1936.

Three regions exceeded their output of a year ago, but the gains were small. The 2.5 per cent in the Rocky Mountain states contrasts unfavorably with 16.4 per cent a month ago. The Middle Atlantic and Pacific areas were barely above the zero line. New England, while lowest under 1936, gained most over recent weeks, having lately been down 12.5 per cent.



Weekly Output, Millions of Kw.-Hr.

1937	1936	1935
Dec. 18...2,202	Dec. 12..2,278	Dec. 14..1,983
Dec. 11...2,196	Dec. 5..2,244	Dec. 7..1,970
Dec. 4...2,153	Nov. 28..2,134	Nov. 30..1,877
Nov. 27...2,065	Nov. 21..2,196	Nov. 23..1,953
Nov. 20...2,224	Nov. 14..2,170	Nov. 16..1,939
Nov. 13...2,177	Nov. 7..2,169	Nov. 9..1,914

Per Cent Change from Previous Year

Region	Week Ending Dec 18	Dec. 11	Dec. 4
New England	— 7 8	—11.5	—12.5*
Middle Atlantic	+ 0.4	— 0.8	— 2.1*
Central Industrial	— 6.8	— 7.1	— 6.9*
West Central	— 1.0	— 1.0	— 1.6*
Southern States	— 1.0	— 2.8	— 5.4*
Rocky Mountain	+ 2.5	+11.4	+11.6*
Pacific	+ 0.1	+ 2.5	+ 3.5*
United States	— 3.3	— 2.1	— 4.1*

*Adjusted for holiday conditions.

Associated Gas Output Up

For the month of November Associated Gas & Electric System reports net electric output of 386,078,106 kw.-hr., an increase of 11,371,818 kw.-hr., or 3 per cent, over November last year, but the smallest monthly percentage increase since May, 1935. For the twelve months ended November 30 output totaled 4,692,337,522 kw.-hr., an increase of 11.2 per cent, or 471,622,683 kw.-hr. over the previous year.

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City Plant Rate Increase

Pointing to increased costs of labor and to taxes on the municipal electric plant at Knightstown, Ind., a petition has been presented to the Indiana Public Service Commission requesting an increase in rates. The increase would apply mainly to the lower brackets and affect the minimum charges more than any other division of the rate schedule. The power is purchased wholesale from the Public Service Company of Indiana and resold to consumers.

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Consolidated Loses Stay

The United States Circuit Court of Appeals in New York has denied the application of the Consolidated Edison Company of New York, Inc., and six affiliated companies for stay of an order of the National Labor Relations Board. The order required the company to dissolve contracts it signed with the International Brotherhood of Electrical Workers, an affiliate of the American Federation of Labor, and reinstate a number of employees alleged to have been discharged because they were members of a C.I.O. union.

As soon as the court announced its decision, Mrs. Elinore M. Herrick, local regional director of the Labor Board, announced the company would be given several days in which to comply with its order.

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Utility Contracts Up 38%

Public utilities construction contracts for the first eleven months of 1937 advanced 38 per cent over the similar period of 1936, according to a report issued by F. W. Dodge Corporation. The gain in residential building contracts amounted to 17 per cent and in non-residential building 19 per cent. Total contracts for the first eleven months amounted to $2,703,672,400, as compared with $2,475,600,300 for the corresponding eleven months of last year.

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TVA Power Resale Profits

Net profit of $60,758.12 from municipal resale of Tennessee Valley Authority power is reported by the city electricity department of Florence, Ala., for the 11½ months ended June 30. City purchased a distribution system from the Alabama Power Company for $220,000 and began operations on July 15, 1936. Operating revenues for this period were listed as $152,067.77; operating expenses, $70,630.43, and taxes paid, $4,752.54.

•

Mid-West Chairmanship Ends

At a meeting of the board of directors of the Middle West Corporation held this week the by-laws of the corporation were amended to eliminate the position of chairman of the board. Purcell L. Smith, who was chairman of the board of the corporation, was elected to fill the vacancy in the position of president.

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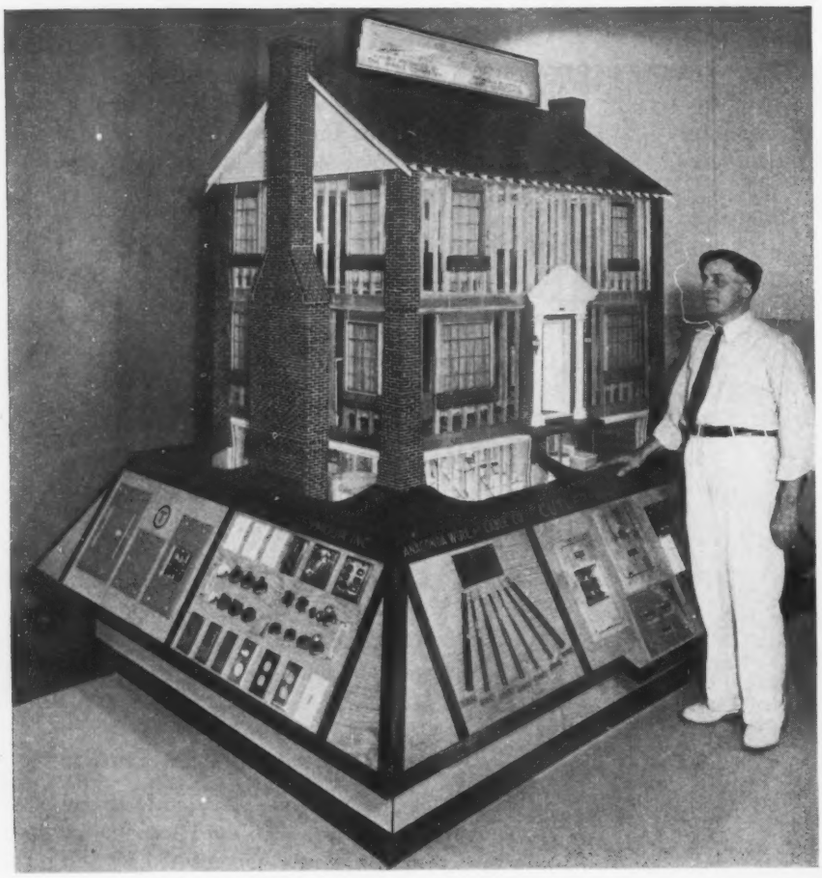
Drops Stock Conversion Plan

Northern States Power Company of Minnesota has withdrawn SEC registration statement for conversion of 275,000 cumulative preferred shares, $5 series, into $5 convertible preferred cumulative series. Also withdrawn were 1,100,000 no-par common shares to be issued upon conversion.

The Industry

IN PICTURES



MODEL HOUSE—This miniature transparent residence, constructed by the wiring committee of the Michigan Electric Light Association, is being used at meetings of contractors, inspectors, builders and architects in promoting adequate wiring

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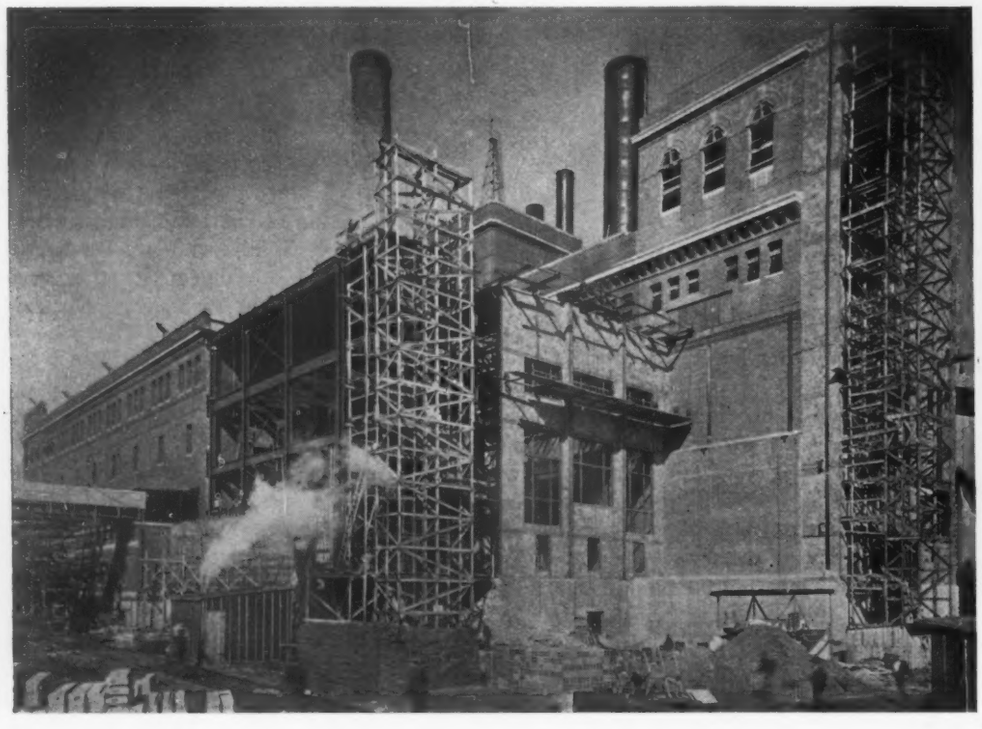
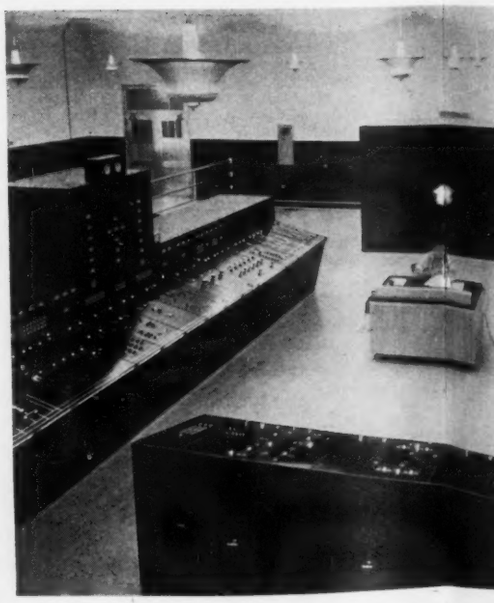
ADD POWER UNITS—This South Meadow station extension of Hartford Electric Light Company, Stone & Webster Engineering Corporation, designing and constructing engineers, will house a 300,000-lb-per-hour boiler designed for both oil and pulverized coal burning and a 40,000-kw. steam turbo-generator to operate at 850 lb. and 900 deg. F. at the throttle. The extension will bring the station rating to 130,000 kw.





LATEST IN CONTROLS—This is the modern contr
plant at Boulder Dam. Banks of lighted panels
operations of the plant. Boulder Dam is now
of energy each month for transmission to

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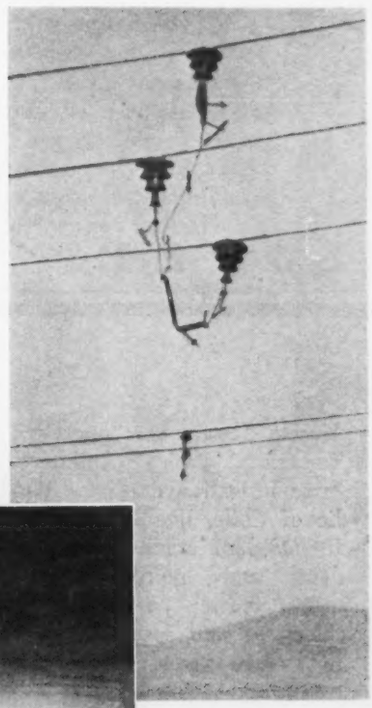


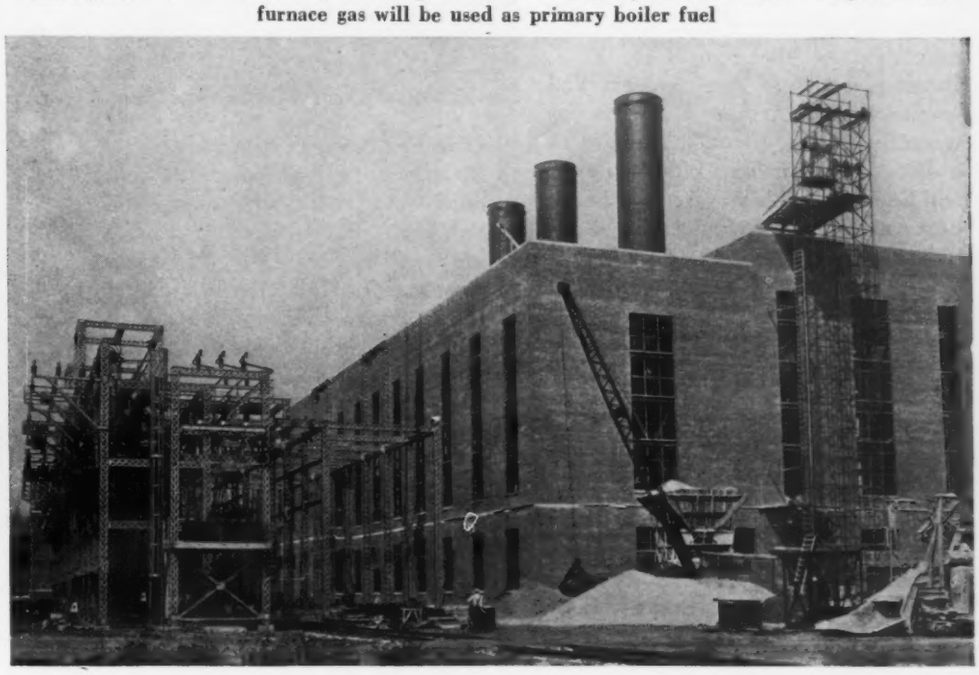
PHANTOM—An astonished patrolman of Pacific Power & Light found these insulators and brackets on the 66,000-volt line in Kennewick district, Ore., dangling after a recent severe lightning storm. The pole had been consumed by fire. Superintendent of Power J. H. Siegfried said there was no interruption of service

MERRY CHRISTMAS—One of the huge lighting displays of General Electric's, Nela Park, Cleveland, which forms a part of the lighted outdoor greeting card. The spectacle attracted more than 300,000 visitors last year

LIGHT FOR EDISON—Having completed the highest point of the Thomas A. Edison memorial tower at Menlo Park, N. J., the ancient tree-raising custom was held recently. At 118 feet above the ground stand (right) William Slocum Barstow, donor of the $100,000 tower, and Walter S. Mallory. Alfred V. duPont, architect, is at left of tree

INDUSTRIAL POWER STATION—Carnegie-Illinois Steel Corporation's new No. 5 power station in South Chicago will house three 300,000-lb.-per-hr. boilers, one 25,000-kw. condensing turbo-generator and three 75,000-cu.ft.-per-minute condensing turbo-blowers. Surplus blast furnace gas will be used as primary boiler fuel

nodern control room of the world's largest power
nted panels tell a second-by-second story of the
m is now generating about 150,000,000 kw.-hr.
smission to Los Angeles, 250 miles away



News ABOUT PEOPLE

Indiana Utility Completes New Executive Set-Up

Recent action by the board of directors of the Northern Indiana Power Company completed the directorate and executive personnel which will manager the company's affairs under the new program to separate operations of the Northern Indiana Power Company from the Public Service Company of Indiana.

C. W. Goris, Indianapolis, was elected a director and comptroller and Fred W. Dopke, general sales manager, was also elected a director. Paul D. Birdsall was elected secretary and treasurer and Carey Shipley was elected assistant secretary and assistant treasurer. All of the new directors and officers were elected to similar positions in the Central Indiana Power Company, holding company for Northern Indiana Power.

Resignations as directors and officers of the Northern Indiana Power Company were accepted from present officials of the Public Service Company of Indiana to complete the separation of the companies. E. J. Booth resigned as vice-president and secretary and Arthur E. Irwin as treasurer. B. H. Lybrook resigned as a director of Northern Indiana Power and George O. Stewart from the board of Central Indiana Power.

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▶ H. D. LARRABEE, operating superintendent of the Connecticut Light & Power Company, Norwich, Conn., has been transferred to the Willimantic offices of that company.

▶ G. W. THAYTON, formerly division engineering supervisor of the Rural Electrification Administration, Washington, D. C., has become electrical engineer for the Chase Brass & Copper Company, Inc., and the Kennecott Wire & Cable Company, New Orleans, La. Prior to his affiliation with REA, Mr. Thaxton was division engineer of the Tennessee Valley Authority at Tupelo, Miss.

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A.I.E.E. Honors Gano Dunn With Edison Medal for 1937

Gano Dunn, president of the J. G. White Engineering Corporation of New York for 24 years, has been awarded the 1937 Thomas A. Edison Medal of the American Institute of

Blank & Stoller

Electrical Engineers. The award goes to Mr. Dunn "for distinguished contributions in extending the science and art of electrical engineering, in the development of great engineering works, and for inspiring leadership in the profession." Presentation ceremony will be held on January 26 in connection with the annual winter convention of the Institute in New York.

Inventor of more than thirty devices in the design and construction of electrical machinery, Mr. Dunn, as chief executive of the White Engineering Corporation, has directed outstanding construction projects, including the great steam plant at Muscle Shoals now operated by the Tennessee Valley Authority, three large irrigation dams for the Republic of Chile, five large dams for the Republic of Mexico, numerous large dams and hydro-electric developments in all parts of the United States, as well as industrial and public utility steam power plants and transmission lines.

Mr. Dunn was first chairman of the Engineering Foundation, founded in 1914; he was president of the United Engineering Societies 1913–16, of the A.I.E.E. in 1911–12 and of the New York Electrical Society from 1900 to 1902.

Mr. Dunn is honorary secretary for the United States of the British Institution of Electrical Engineers. He is honorary member of the American Association of Iron and Steel Engineers and a member of the A.S.C.E., A.S.M.E., the Franklin Institute, I.E.S. and other technical societies. He has been a member of the Business Advisory Council for the Department of Commerce since its beginning.

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▶ J. E. ZIPOND, who has been an assistant electrical engineer for the public works branch, United States Treasury Department, Washington, D. C., recently became associated with the Duquesne Light Company, Pittsburgh, Pa., as an electrical engineer.

▶ K. E. V. HALLAR, formerly assistant operating and maintenance engineer with the Husqvarna Vapenfabriks, Huskvarna, Sweden, is now with the Stone & Webster Engineering Corporation, Boston.

▶ ARTHUR SIMON, consulting electrical engineer for the Cutler-Hammer Company, Milwaukee, Wis., has established his own consulting engineering firm, with offices in Milwaukee.

A native of Germany, Dr. Simon came to the United States in 1903 when he entered the employ of Cutler-Hammer Company as an electrical engineer. In 1905 he was placed in charge of a.c. engineering, and in 1921 was appointed consulting engineer to the company. He served as a member of the American Institute of Electrical Engineers' committee on power transmission and distribution from 1923 to 1925. Dr. Simon will retain his connection with Cutler-Hammer.

▶ GEORG KEINATH, director of the laboratories of Siemens & Halske, Berlin, Germany, recently came to the United States to establish consulting engineering offices at New York, N. Y.

▶ G. H. BLIESNER, until recently farm electrification agent for the Puget Sound Power & Light Company, Mount Vernon, Wash., now has become agricultural electrical engineer for the Yam Hill Electric Company, Newburg, Ore.

▶ F. A. SCHILLER has resigned as president of Indicator Corporation, Newark, N. J., and is succeeded by A. E. Carpenter. EDWARD A. TUNIS has been elected vice-president and general manager in full charge of all operations.

▶ R. M. BAKER, research engineer Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has been appointed to the faculty of the Kansas State College of Agriculture and Applied Science as an instructor in electrical engineering.

Blank & Stoller

EARLE S. THOMPSON was recently elected president of the American Water Works & Electric Company, Inc., to succeed H. Hobart Porter. Mr. Thompson has held executive positions with the organization since 1923. He is a native of Bath, Me., and a graduate of Bowdoin College

▶ DR. SANFORD A. MOSS, mechanical engineer in the General Electric Company's Thomson research laboratory, West Lynn, Mass., will retire from General Electric on January 1 after 34 years of service with the company. In honor of his retirement Dr. Moss was the guest of Dayton, Ohio, army officials at a dinner on December 15. He has taken a prominent part in the development of the centrifugal compressor and supercharger for aviation engines. Dr. Moss entered the employ of General Electric in 1903 at West Lynn. He has been awarded some 36 or more patents on mechanical devices. He is a member of the American Institute of Electrical Engineers, American Society of Mechanical Engineers, Society for the Promotion of Engineering Education and other technical associations.

DISCUSS PLANS FOR 1938—Merchandising plans for 1938 were discussed at the conference held recently at the general sales offices of the Emerson Electric Manufacturing Company in St. Louis. New and improved fan models were demonstrated to the sales, advertising and fan engineering staff in attendance. Emerson is anticipating one of the biggest years in its entire history

OBITUARY

Robert J. Deneen

Robert J. Deneen, vice-president of the Ohio Brass Company, died at Augustana Hospital, Chicago, December 12, following an intermittent illness of two years. Mr. Deneen had been associated with the Ohio Brass Company for 30 years, serving in the capacity of district sales manager in the Chicago area until 1928, when he was appointed vice-president in charge of mid-western sales with headquarters in Chicago.

Born in Milwaukee in 1880, Mr. Deneen was educated at Marquette University. He was a member of the American Institute of Electrical Engineers.

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▶ WILLIAM MUELLER, who had represented B. J. Carney & Company in the Chicago territory for more than twenty years, died November 29. Mr. Mueller was at the head of William Mueller & Company, which was organized in 1862, and ever since that time he had manufactured and distributed cedar poles, posts, ties and piling. During his long association with the cedar industry he established a wide acquaintance in the utility industry through the entire central west.

▶ THOMAS H. DAY, electrical engineer of the New England Insurance Exchange, died December 6 at his home in West Hartford, Conn., in his seventy-seventh year. Prior to his association with the New England Insurance Exchange he was connected with the Hartford Board of Underwriters. Mr. Day attained international recognition for his lectures on safe electrical standards. He had served on the electrical committee of the National Fire Protection Association and on special committees of the United States Bureau of Standards.

Manufacturing AND MARKETS

Copper Prices Right for Utility Purchases

Rehabilitation of distribution and transmission lines, plus new construction to take care of added load, will likely benefit the copper industry later in 1938, although it seems likely that utility consumption of copper during the next few months at least will be under that for corresponding periods of 1937.

So far as prices and stocks are concerned, the time would be ripe for utility purchases. Within the past two weeks a price of 10.125 cents a pound was established for domestic copper, delivered at Connecticut Valley, many operators believing that 10 cents would be the bottom level for this movement. A year ago, when heavy purchasing was going on, copper was 11 cents a pound, Valley.

Again, while copper producers have curtailed production from 20 to 50 per cent, in an effort to stabilize stocks, domestic stocks of refined copper increased 38,765 short tons in November to total 221,676 tons, as against 142,374 tons on January 1 and a low of 99,576 tons reported at the end of April. Copper consumption by utilities in 1936 amounted to 72,000 short tons, according to the American Bureau of Metal Statistics. No figures are available for 1937, but on the basis of 1937 budgets, consumption may total around 100,000 tons. Copper consumption by electrical manufacturers for the first three-quarters of 1937 amounted to 158,300 short tons, compared with 164,300 for all of 1936, according to the bureau.

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York to Exhibit 1938 Line

"Important new developments will feature our sales program for 1938," stated S. E. Lauer, vice-president in charge of sales of the York Ice Machinery Corporation, announcing the York Conference and Exposition to be held in York, Pa., January 11-13. This will be the first showing of York's 1938 air conditioning and refrigeration equipment. More than 300 regional and branch managers, sales engineers and distributors will gather at this three-day meeting, of which J. L. Rosenmiller, sales promotion manager, is chairman.

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Louisiana Steam Company Awards Equipment Contracts

Louisiana Steam Generating Corporation, Baton Rouge, has awarded contracts for primary equipment for new addition to steam-generating plant, on which work will be carried out in 1938. An award for a 15,000-kw. steam turbo-generating unit has been placed with Westinghouse Electric & Manufacturing Company, the unit to be similar to the three others now in service at the plant. Contract for a high-pressure boiler unit has been let to Babcock & Wilcox Company, the unit to have a steam-generating capacity of 500,000 lb. per hour, and will deliver to the turbines at 600 lb. working pressure.

The new addition will be designed and construction supervised by Stone & Webster Engineering Corporation. This will form part of a $3,000,000 expansion and improvement program of the utility company during the coming year.

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New Cleaner Company

Effective January 1, 1938, a new company, Magic-Aire, Inc., 1734 Ivanhoe Road, Cleveland, will take over the production and distribution of this line of electric suction cleaners from the Cleveland Suction Cleaner Company. Three models are offered.

Substantial Profits Shown in Reports

Among the electrical manufacturing companies which have recently issued earnings statements are the following:

ROME CABLE—Nine months ended September 30: Net income, $159,430, equal to 84 cents each on 189,250 shares. September quarter: Net income, $32,806, or 17 cents a share, against $73,923, or 39 cents a share, in previous quarter, and net loss of $14,910 in September quarter of 1936, when company commenced manufacturing.

WESTON ELECTRICAL INSTRUMENT—Including domestic subsidiary, nine months ended September 30: Net profit, $373,720, equal under participating provisions of shares to $2.63 each on 27,376 no par shares of $2 cumulative class A stock and $1.88 a share on 160,583 no par shares of common stock. Net profit last year was $161,885, or 73 cents each on 160,583 common shares after nine months' dividend requirements on $2 Class A stock.

GRATON & KNIGHT—Including subsidiaries, thirty-six weeks to September 11: Net income, $270,779, equal to $1.70 each on 80,030 shares after allowing for preferred dividends. Net income for the twelve weeks to September 11, was $57,520, or 17 cents a share on same basis.

NASH-KELVINATOR—Net profit, $3,640,747 for the fiscal period ended September 30, which amount is after depreciation and taxes, including provision for surtax on undistributed income. The report covers earnings of Nash Motors division for the ten months since the close of the last fiscal year, Nov. 30, 1936, and the earnings of the Kelvinator division for the nine months since the date of the merger, January 4, 1937.

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American Transformer Expands New Building

To enable the company to direct more intensive effort on the manufacture and sale of larger transformers, including distribution and power types, American Transformer Company has opened a new branch factory at 273-301 Emmet Street, Newark, N. J.

Although the new building is now being utilized principally for the assembly of transformers, future plans of the company, according to Mr. Thomas M. Hunter, president, call

for transferring all manufacturing operations on heavy industrial equipment to this location. General offices remain at 172-180 Emmet Street.

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Manufacturers Make Sales Assignments

Electrical manufacturing companies have recently made the following assignments to their sales staffs:

Sangamo Electric Company, Harry W. Wittenburg, district manager in Los Angeles, succeeding the late J. G. Monahan.

The Falk Corporation has appointed Transmission Engineering Company, San Francisco, its representative in northern California. A. Pedersen will be in charge of this office.

Triangle Conduit & Cable Company has announced that the states of Maryland and Virginia and the District of Columbia become a part of the Philadelphia territory, under the direction of Harry G. Anschuetz. The state of Colorado becomes a part of the Chicago territory, under the direction of the George Butler Electric Sales Company.

B. J. Carney & Company, William Mueller, Jr., to represent it in the Chicago territory, succeeding his father, the late William Mueller.

Allis-Chalmers Manufacturing Company has opened a regular office in Syracuse, N. Y., with George H. Carden as sales engineer in charge. This office will operate as a branch of the company's Buffalo district office of which H. E. Weiss is manager.

Hartley Gauge Corporation, Landsdale, Pa., has appointed Paragon Sales Company, Philadelphia, as sole selling agents for the Electra mirror switch plate which it manufactures.

Osmose Corporation of America has appointed the George E. Honn Company of San Francisco as sales representatives in the northern California territory.

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Sees Big Refrigerator Year

With net sales of electric refrigerators, systems and condensing units during 1937 running 87 per cent above the previous year, executives of the Universal Cooler Corporation, Detroit, are said to be looking forward to 1938 as the most successful year in the company's history. The 1938 line of household refrigerators was introduced to the company's field sales organization recently in Detroit, at which time complete sales and advertising plans were announced.

New York Metal Prices

	Dec. 14, 1937 Cents per Pound	Dec. 21, 1937 Cents per Pound
Copper electrolytic	10.25*	10.125*
Lead Am. S. & R. price	5.00	4.75
Antimony	14.25	14.00
Nickel ingot	35.00	35.00
Zinc spot	5.35	5.35
Tin Straits	43.75	42.25
Aluminum, 99 per cent	20.00	20.00

* Delivered Connecticut Valley.

Field Reports on Business

Electrical equipment markets are practically at a standstill with very little forward buying noted. Year-end inventories are being kept at a minimum, while closing adjustments are being made. Christmas retail trade of household electrical appliances is good. Washington is watched as indicator.

NEW YORK

Failure of the Administration to give more encouraging signs of co-operation with business by concrete examples has been a disappointment. The question of the undistributed profits tax continues to harass business as managements attempt to appraise earnings in advance of final year-end statements. Just how far Congress will go to effect a full change remains a moot question.

The fact that President Roosevelt has resumed his conferences with utility executives in an effort to solve the power situation appears encouraging. Until some of the legal situations are decided by court decisions there is not any likelihood that the President will alter his power policy to any great extent. It is conceded that once the punitive pressure is relieved the utilities will be in a position to go ahead with expansion programs of major proportions.

Christmas retail trade in this area has been very good, with small electrical appliances featured. Heavy equipment orders continue slow, with little change likely until after the new year. Forward orders have been kept small in order to make inventory carryover small.

New substation construction for 1938, so far reported by utilities, total 2,400,000 kva. Transmission and distribution expenditures are expected to be large. More than $20,000,000 of rural line construction has been listed.

PACIFIC COAST

Dealers everywhere report heavy belated buying and wholesalers have received a fair volume of reorders, though usually in minimum package quantities. Sales of lighting sets and Christmas tree accessories are running well over those of last year and there is a particularly large call for the more reasonably priced stand lamps.

Power line construction, both present and projected, is the headline feature this week, with much southern California buying of copper wires and cables, such as 125,000 lb. of bare copper, sizes No. 6 to 4/0, by the city of Glendale and 20,000 ft. of sizes No. 10 to 4 varnished cambric by the same; 50,000 ft. 35 per cent paraleaded and 30,000 ft. No. 2/0, three-conductor, 2,300-volt by Los Angeles and a $25,000 order by the Pacific Gas & Electric Company.

The Imperial Valley system, requiring 7,500 poles and hardware and wire in proportion, has been covered by bids. Southern California Edison Company announced a $3,500,000 line extension program for 1938, including $600,000 for its Boulder to Chino line, $1,200,000 for Chino station extensions, $300,000 for Santa Monica and Huntington Park substations, $325,000 for Santa Barbara and Pasadena enlargements of service and $1,000,000 for miscellaneous transmission lines. Other utility construction covers a power plant building for Alturas and Oakland turbine room extensions.

The outstanding award for the past months is $34,442,240 to the Interior Construction Company of Oakland for Grand Coulee Dam near Spokane, including left power house and pumping plant foundation. Street lighting business is increasingly active with many scattered jobs averaging $5,000 each.

NEW ENGLAND

Some pricing of industrial supplies is reported from office managers in this district, but commitments either in quantity lots or unusual technical features are the exception rather than the rule at present. During the past week one representative records an encouraging volume of orders for small and fractional horsepower motors, all coming from the Massachusetts machine manufacturers; on the other hand, bookings for future delivery are at a standstill and negotiations are lagging.

Among the kinds of electrical equipment that have maintained a steady trend through the past season and until the past week are arc welders, interest in which has slowed down since the first of the month, but inquiries for which are still being received in good volume. In this district the 1937 sales volume of this equipment will show a marked increase over that of 1936. Inquiries for weatherproof wire are a little more active and important commitments appear to be awaiting the conviction of buyers that prices have stabilized. Wire and cable orders reported by one manufacturer for this district are far in advance of those reported for last year at this time. Inquiries for insulation and raw plastics are being received by one specialist in these materials.

According to one large wholesale house a decided improvement in the same of domestic appliances is noted all along the line. Smaller electrical appliances seem to be in pretty strong demand throughout this district, with the reports from Boston houses quite uniform in gauging the current trend.

CHICAGO

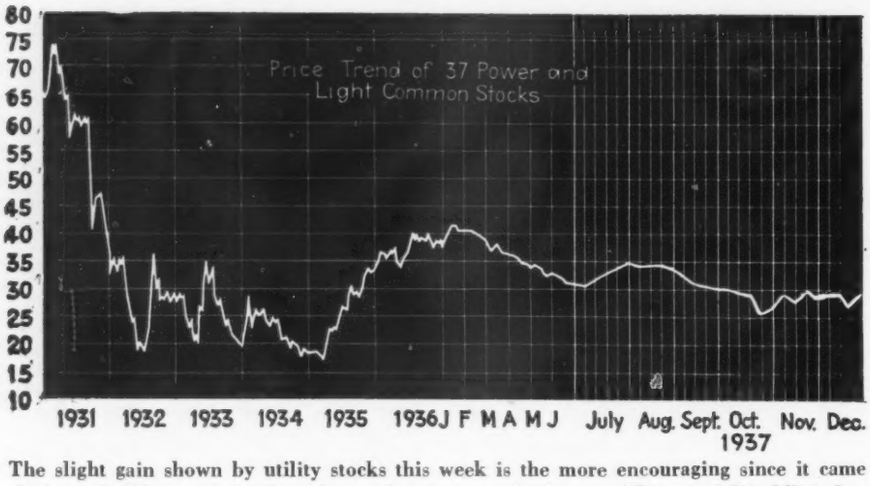
Indications of improvement in some lines were evident last week as reports showed a slight pick-up in their activity. Electric appliances are moving at a rate just above last year and merchandising, on the whole, made remarkable gains over the previous week. It is still doubtful, however, if the holiday volume will equal that of a year ago, but the improvement is encouraging.

Industrial activity was unchanged from the previous week. Orders for electrical equipment were scattered and of comparatively small amounts. Employment layoffs were less prevalent and a few cases of reemployment were noted, primarily for seasonal business. Bonuses were announced by a surprising number of companies.

Local utility earnings for November declined from the previous month, but were substantially above last year for the eleven-month period. Although central station purchases have been materially reduced, construction programs amount to sizable figures in the 1938 budgets.

Lighting equipment sales are holding up remarkably well in the face of the present business recession. Street lighting and commercial units account for a large proportion of this good showing, one prominent manufacturer reporting sales 102 per cent higher than a year ago.

Utility Stocks in Contra-Seasonal Gain



The slight gain shown by utility stocks this week is the more encouraging since it came during a holiday period, when the market is generally lower. "Electrical World" index, 27.8; previous week, 27.4; year ago, 37.3; 1937 high, 41.5

Approves Utility's Bank Credit Plan

In an opinion recently made public the SEC recognized the difficulties facing many public utility companies in selling equity securities in the present market by granting permission to the Northern States Power Company to issue not to exceed $4,000,000 of 3 per cent secured notes, due on October 1, 1939, to banks in connection with a proposed bank-credit agreement involving commitment fees estimated at $32,000.

The money obtained, with other funds available from earnings and cash on hand, will be used for additions, extensions and betterments to plant and equipment of the company and its subsidiaries, costing $9,005,000. The company expects to refund the notes at or before maturity by the sale of equity securities at better prices than could be obtained for them at this time.

In granting application, the SEC stated that it recognized that timing of capital issues involved managerial judgment, but nevertheless, that it was of the opinion "a postponement of permanent financing and consequent resort to bank loans should only be undertaken after the most careful consideration."

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Simplifies Capital Set-Up

Steps have been taken to dissolve the Power Securities Corporation, a subsidiary of the Electric Power & Light Company, which controls the Idaho Power Company. This is a continuation of the program seeking the elimination of intermediate units in the Electric Power & Light System.

When the dissolution of Power Securities is completed Electric Light & Power will have assumed the obligation for the remaining outstanding $1,200,000 of Power Securities 6 per cent bonds, which are to be redeemed in uniform amounts up to 1948.

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Arrear Dividends; Other Disbursements

Many electric light and power companies have recently taken dividend action, as follows:

Directors of the New England Gas & Electric Company have declared a dividend of 50 cents against accumulations on the $5.50 dividend series preferred stock. Dividends of 50 cents were paid on October 1 and July 1, this year.

A year-end dividend of 25 cents a share and the regular quarterly distribution of 50 cents each on the common stock have been voted by the Cleveland Electric Illuminating Company.

Central and Southwest Utilities declared against accumulations a dividend of $3 a share on the $6 prior lien preferred and $3.50 on the $7 prior lien preferred.

Pacific Public Service Company wiped out the dividend arrearage on the first preferred stock. Directors declared a dividend of $1.30 a share paid on December 15 to holders of record of December 6 and a second of 50 cents a share, for arrears, payable on January 5 to holders of record of December 27. Arrearage on this stock May 1 was $2.45 a share. The directors also voted to pay $300,000 on the company's indebtedness, reducing it to $4,800,000. A similar payment was made in May.

American Power & Light, $1.12½ on $6 preferred and 93¾ cents on the $5 preferred. During this year the company paid dividends of $1.50 each on the $6 preferred on April 1, July 1, and October 1 and dividends of $1.25 on the $5 preferred on the same dates. These distributions, which are equal to three-fourths of the quarterly dividend rate were paid on December 20, instead of January 1, which is the regular dividend payment date. Total dividends declared this year, including the current declaration, amount to $5.62½ on the $6 preferred and $4.68¾ on the $5 preferred, or 93¾ per cent of the full preferred requirements.

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SEC Sets Hearings on New Applications

Hearing has been set for January 4 by SEC on a declaration by the American Water Works & Electric Company, Inc., New York, asking approval of the issuance of $6,000,000 of 3½ per cent promissory notes, payable on December 31, 1939. The new notes would be for the renewing, at maturity dates, of an equal principal amount of outstanding promissory notes.

Another SEC hearing has been set for December 28 on an application by Central Ohio Light & Power Company, Findlay, a subsidiary of Crescent Public Service Company, for exemption from the requirements for filing a declaration covering the issuance of four series of 6 per cent unsecured serial notes, aggregating $93,215. The notes are to be issued to various companies in payment for equipment necessary in the construction and completion of an electric generating plant.

Application by Wisconsin Michigan Power Company for exemption from the holding-company act for the issue and sale of $2,000,000 of first-mortgage 3¾ per cent bonds due in 1961, and of a 3 per cent five-year serial note for $700,000 has been approved by SEC.

On December 30 there will be a hearing on an application by Cumberland County Power & Light Company, a subsidiary of the New England Public Service Company, for approval of the acquisition of 9.770 shares of $35-par value common stock and $224,000 of 5 per cent first and refunding mortgage gold bonds of Berwick and Salmon Falls Electric Company for $499,000 in cash from Twin States Gas & Electric Company.

Utilities Reports (Earnings)

	Net Income 1937	1936
† Detroit Edison and subs.	$10,370,176	$11,026,914
* Kansas City Pwr. & Lt.	4,481,142	4,609,123
* United Lt. & Pr. and subs.	5,173,713	4,429,939
* Amer. Lt. & Trac. and subs.	5,792,285	5,384,242
* Continental G.&E. and subs.	4,659,005	4,470,674
† Connecticut Lt. & Pwr.	4,429,117	4,687,320
* Wisconsin Pub. Serv. and sub.	1,456,574	1,086,052
* American G.&E. and subs.	13,517,967	11,967,193
* Eastern Util. Assn. and subs.	1,799,009	1,907,608
* Metropolitan Edison ..	3,601,599	‡3,572,746
* Potomac Elec. Pwr. ..	4,091,755	3,743,106

* Twelve months ended October 31.
† Twelve months ended November 30.
‡ Twelve months ended December 31.

New EQUIPMENT

KITCHEN VENTILATION—An electrically driven centrifugal blower is combined with a kitchen range hood in the "Vent-a-Hood," new kitchen ventilating unit developed by the Dallas Engineering Company, Dallas, Tex. Blower is built into the hood in such a manner that it may easily be disassembled for cleaning and removing heavy greases trapped by the unit. A utility light is also built into the hood and sheds light over the cooking surface of the range. Three sizes of units are offered.

LIGHTING DEVELOPMENT—Possibilities of the application of "Conti-Glo," a newly developed luminous paint, to outdoor advertising were suggested at the recent convention of the Outdoor Advertising Association. Four outdoor bulletin sketches, treated with the luminescent paint, were shown; one is reproduced in an accompanying illustration. Ordinary Mazda lighting, flashed on and off while ultra-violet light from H-3 Type X mercury lamps remains on, causes the changes shown. The paint is a development of the Continental Lithograph Corporation, Cleveland.

OUTLET WIRING SYSTEM—"Plug-In-Strip," announced by the National Electric Products Corporation, Philadelphia, is a continuous self-wired strip which provides electrical outlets or "plug-ins" every six or eighteen inches. In addition to its use in the home, it is suggested for service in appliance departments of stores, in office buildings and factories using small electrical machines. To install, the strip is fastened to the wall through fastening holes.

DIRECT-CURRENT METER—Developed for accurate measurements of ionic and electronic currents, the "Ultra Sensitive" d.c. meter announced by Engineering Products Division of RCA Manufacturing Company, Camden, N. J., is a self-contained, battery-operated instrument, employing a new electronic circuit said to operate with a stability and accuracy approaching that of the average reflecting galvanometer. Essentially it consists of a multiplicity of input circuits, a feedback-type amplifier and a meter circuit. Meter provides for current measurements from 0.02 to 10,000 microamp.; voltages from 0.1 to 500 volts; resistance, from 0.1 to 10,000 megohms, or to 200,000 megohms, with 90 volts in series.

BURGLAR ALARM—Especially designed for offices, shops, schools, apartments, hotels and homes, a new low-cost "Electric Eye" burglar alarm is being manufactured by Universal Control Devices, Chicago. It consists of two compact units—light source, which plugs into any convenient 110-volt a.c. or d.c. outlet, and the photo-electric unit, which also plugs into a similar outlet and is connected to the bell, gong or other alarm device The light source has a swivel joint so that beam may be focussed into the "Electric Eye" from various angles.

SIGN REFLECTOR—New angle-hood, vertical-socket construction on the "Angle-Hood" sign reflector is designed to permit direct lamp service from the ground, eliminating the use of ladders. The reflector, a product of the Benjamin Electric Manufacturing Company, Des Plaines, Ill., is elliptical in shape and is said to provide a straight line cut-off at top of the board which practically eliminates light spillage, scallops and shadows. It uses a 75–150-watt lamp which hangs base up in a vertical plane.

ELECTRICAL INSULATION is one use suggested by the Frund Products Company, Chicago, for its "Flex-O-Fix," a black plastic compound with adhesive properties. It can be manipulated or spread, when applied from the tube container, and dries tough, elastic, waterproof, acid-proof and electrical resistant.

COAL AND ELECTRIC RANGE—Crown Stove Works, Chicago, announces the "Northwood" automatic electric and coal range which is stated to include every advantage of the electric range plus a large capacity circulating heater. Oven is of seamless construction, floating on rock-wool with the exclusive feature of capillary tube snap-action temperature control mounted on back guard. Surface burners are open type standard equipment with "Chromalox" inclosed units available. Coal, wood or coke may be used in heating section and is burned in an extra heavy fire box with duplex grates. Hot water section is offered at extra cost.

EXPOSURE METER—General Electric Company, Schenectady, has announced a new exposure meter which uses a hood to limit the angle of light received to that approximately of a camera and which may be used as a light meter with this hood removed. When pointed at a normal scene, the full angular width of the camera is included in a horizontal direction, but in the vertical direction a narrower angle is used. This is said to lessen the error of indication caused by strong sky light. Hood is provided with a hinged, slotted cover which when opened increases the sensitivity of the meter by 10 to 1, and when removed increases it by an added 10 to 1 ratio.

VARIABLE RESISTANCE—International Resistance Company, Philadelphia, has announced a new resistance analyzer and indicator which is continuously variable from 0 to 1.0 megohm and has a direct-reading calibrated dial. Controlled by a single knob, it consists of two sections—a heavy-duty, wire-bound rheostat type element from 0 to 30,000 ohms and a metallized-type resistance element from 30,000 ohms to 1 megohm. It has a circular form for either bench use or panel mounting.

WIRING DEVICE—The Eagle Electric Manufacturing Company, Inc., Brooklyn, N. Y., is now manufacturing a Bakelite "Tri Tap," adaptable for either table use or baseboard mounting and containing three outlets to receive three flat caps or two standard round caps. It employs the company's pressure contact and one screw assembly with a metal reenforcement plate.

VITREOUS ENAMELED RESISTORS—Compact, 1-watt, 1 per cent accurate, vitreous-enameled wire-wound resistors are offered by Ohmite Manufacturing Company, Chicago. Designated as the Riteohm "71," the resistors up to 50,000 ohms are on a 1¾-in. length tube and up to 100,000 ohms on a 2-in. length tube. Low inductance and distributed capacity are said to result from their small size and single-layer construction.

Outdoor Bulletin Sketch; with Mazda lighting, above; with ultra-violet lighting, below

Burglar Alarm

Exposure Meter

Combination Coal and Electric Range

Montana Power Seeks License

Montana Power Company has filed with the Federal Power Commission an application for a major license covering a development on Flint Creek in Deer Lodge and Granite Counties. The project, which is constructed, involves a power house, having an installed capacity of about 1,500 hp. in two units and appurtenant works. The energy generated is used in mining and milling operations, pumping, rural electrification, and light, heat and power for the cities of Phillipsburg and Anaconda.

A permit issued by the department of Agriculture and a license for a minor part of the project were held by the Anaconda Copper Company. The license was transferred to the Montana Power by order of the commission last June. The order provided that the transferee apply for a major license for the entire project.

•

Lets $192,000 Line Contract

Buffalo County Public Power District, Andrews Building, Kearney, Neb., A. G. Zimmerman, president, has awarded a contract to the Elkhorn Construction Company, Norfolk, Neb., for the construction of 110 miles of transmission lines in Buffalo County at a price of $192,964 and will proceed with work at once. Robert Fulton, Lincoln, Neb., is consulting engineer.

•

P.U.C. Rules on Service Costs

An order forbidding affiliates of holding companies to charge one another more than actual cost for service has been issued by the Michigan Public Utilities Commission. According to its terms, the order applies to services, sales or construction contracts between subordinate units of holding companies under jurisdiction of the commission.

•

Abandons Generating Plants

The Water Works Commission of Neenah, Wis., has voted to abandon its two generating plants and has signed a one-year contract with the Wisconsin-Michigan Power Company to supply electricity to operate the plant at the same rate as street lighting.

Sales OPPORTUNITIES

KENDRICK, WYO.—Bureau of Reclamation, Denver, Colo., receives bids until January 3 for three motor-driven gate hoists for operating 14 x 50-foot fixed wheel gates to be installed in spillway at Seminoe Dam, Kendrick project, Wyo. Equipment will be installed by Government (Specifications 763).

TEXAS CITY, TEX.—Republic Oil Refining Company plans installation of motors and controls, conveyors, electric pumping machinery and other equipment in connection with expansion and improvements in local oil refining plant. Cost close to $450,000.

FOSTER, NEB.—Iowa-Nebraska Light & Power Company, Lincoln, Neb., plans new transmission line from Pierce to Foster, connecting with power substation at latter point. Work is scheduled to begin soon.

BROOKLYN, N. Y.—Signal Corps Procurement District, Army Base, First Avenue and Fifty-eighth Street, receives bids until January 5 for quantity of transformers, switches, coils, sockets, relays, rectifier units and other electrical equipment (Circular 87).

NEWARK, N. J.—Brass Yeast Corporation, 740 Frelinghuysen Avenue, Samuel Brass, president, recently organized, plans installation of motors and controls, conveyors, regulators and other equipment in new three-story yeast-manufacturing plant. Cost close to $100,000.

MORNING SUN, IOWA.—Receives bids until January 3 for equipment for municipal electric power plant, including three Diesel engine-generator units and auxiliary equipment. R. W. Gerhart, 349 Twenty-first Street, S.E., Cedar Rapids, Iowa, is consulting engineer.

BRIDGEPORT, CONN.—United Illuminating Company has plans nearing completion for new power substation on Housatonic Avenue. Cost close to $50,000, with transformers and auxiliary equipment.

CHICAGO, ILL.—Illinois Zinc Company, 332 South Michigan Avenue, plans installation of motors and controls, conveyors, electric hoists and other equipment in new plant for production of zinc alloy products. Site is being selected and work is scheduled to be placed under way early in 1938. Cost estimated over $400,000.

RHINELANDER, WIS.—Wisconsin Public Service Corporation, Milwaukee, plans extensions in rural electric system in vicinity of Pine Lake, Oneida County, where service will be furnished to a number of communities. Permission has been granted.

VANCEBURG, KY.—Board of Lewis County Commissioners has authorized plans for new county-owned electric power plant. A bond issue of $148,000 has been approved for project. Proposed to begin work early in 1938.

BALTIMORE, MD.—Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, receives bids until January 3 for one 5-kw. motor-generator set, with one constant potential battery charger (Proposal 398-55).

ST. LOUIS, MO.—Ford Motor Company, Dearborn, Mich., plans installation of motor-generator sets, heavy-duty motors and controls, regulators, conveyors, electric hoists and other equipment in new main assembling plant on tract of about 370 acres of land in St. Louis County, near St. Louis, recently acquired. A power plant will be built. Work on project is scheduled to begin early in 1938. Cost over $2,500,000.

COLUMBIA, MO.—Board of Trustees, University of Missouri, receives bids until December 28 for one 750-kw. turbo-generator unit and auxiliary equipment, and for one boiler unit with rating of 50,000 pounds of steam per hour, for installation in power plant at institution. R. H. Sogard is superintendent.

SPOKANE, WASH.—International Harvester Company, 606 South Michigan Avenue, Chicago, Ill., Motor Truck Division, plans installation of motors and controls, conveyors, electric hoists and other equipment in new one and two-story factory branch at Spokane, where site has been secured fronting on Northern Pacific Railway right-of-way. Cost close to $200,000.

DUBUQUE, IOWA.—Interstate Power Company, Dubuque, plans extensions in transmission lines in Clayton County, vicinity of McGregor. Application has been made for permission.

HAGERSTOWN, MD.—Has rejected bids recently received for extensions and improvements in municipal electric power plant and will ask new bids at early date, including installation of new generating unit and accessory equipment. Cost close to $200,000. Wood & Kirkpatrick, Stock Exchange Building, Philadelphia, Pa., are consulting engineers.

MAQUOKETA, IOWA—Receives bids until January 6 for extensions and alterations in municipal electric power plant, including installation of new 875-hp. heavy-duty diesel engine-generator unit and auxiliary equipment. J. G. Thorne, city clerk, in charge.

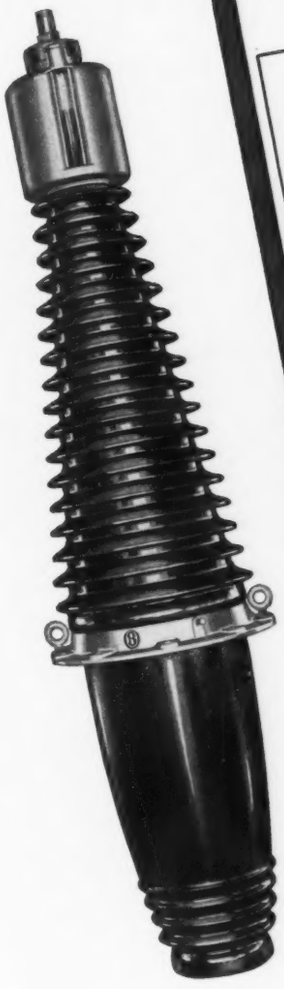
MUSKOGEE, OKLA.—Pure Oil Company, 35 East Wacker Drive, Chicago, Ill., plans installation of motors and controls, conveyors, electric pumping machinery and other equipment in connection with expansion and improvements in oil refining plant at Muskogee, used for gasoline production. Entire project will cost over $850,000.

•

Utility Auction Off Again

Sale at auction of 712,411 shares of common stock of the Jersey Central Power & Light Company, scheduled to be held this week by the New York Trust Company as trustee for National Public Service Corporation debentures, has been adjourned until January 28.

"High-Voltage Low-Joltage"



WE'LL SOON HAVE MORE O-B BUSHINGS WORKING FOR US, JIM.
YEP! AND THEY'RE CERTAINLY BUILT FOR HARD WORK. JUST LOOK AT THEM.
1
THEY ARE MIGHTY RUGGED, AND THEY WILL TAKE A LOT OF PUNISHMENT.
GUESS THAT'S WHY THEY NEVER BREAK DURING SHIPMENT OR WHEN WE INSTALL THEM.
2
THAT'S ONE REASON. ANOTHER'S BECAUSE THE PARTS ARE HELD PERMANENTLY IN COMPRESSION BY SPRING PRESSURE.
GIVES THEM EXTRA STRENGTH AND A CERTAIN AMOUNT OF RESILIENCY, EH?
3
YES. AND THE RESILIENCY ALLOWS THEM TO STAND ANY BAD JOLTS IN SERVICE.
HMM, JOLTS. MAYBE WE SHOULD CALL THEM HIGH-VOLTAGE, LOW-JOLTAGE BUSHINGS.
4

GREAT strength *plus* resiliency! Jim lost no time in grasping the full significance of the compression assembly used in O-B oil-filled bushings. Essential to resist breakage during shipment or installation, strength and resiliency are even more necessary to enable a bushing to withstand operating and unusual emergency loads. All parts of O-B bushings are ruggedly built. That gives them great strength. And all external parts are permanently held in place in compression by husky coiled springs which provide resiliency and extra sturdiness. Next time you need apparatus bushings, specify O-B units? The compression assembly, use of porcelain for the internal dielectric, and several other exclusive O-B features, assure you of outstanding mechanical and electrical performance—and long life.

OHIO BRASS COMPANY

MANSFIELD, OHIO

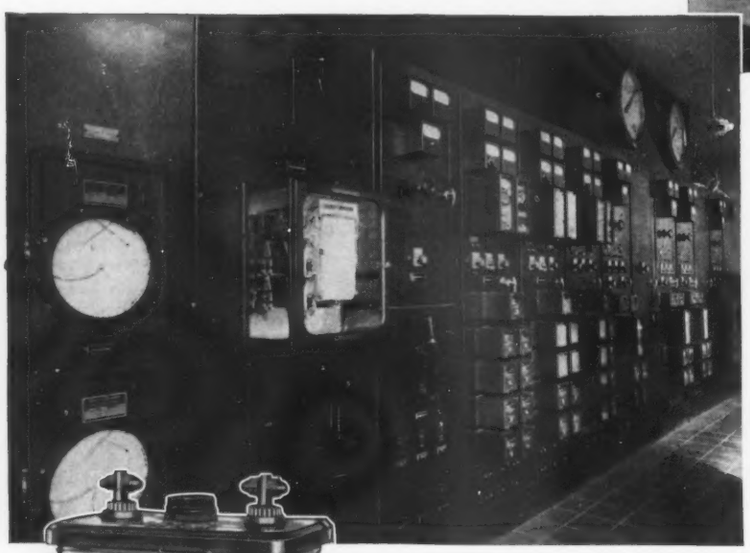
1913-H

Canadian Ohio Brass Company, Limited, Niagara Falls, Ontario, Canada

When Ordering Equipment Specify Bushings by

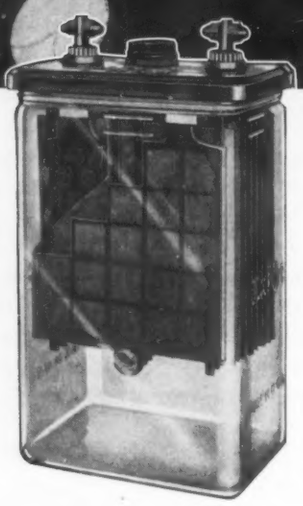
PROTECTING THE ELECTRICAL EQUIPMENT OF WASHINGTON'S SEWAGE TREATMENT PLANT

Exide
CHLORIDE
BATTERIES



Above: Exterior of power house and at left, interior of pump house, in each of which a 60-cell Exide-Chloride Battery provides ample protection.

At this $3,600,000 modern sewage treatment plant, where gas from sludge provides fuel for 1200 h. p. engine, Exide-Chloride Batteries are used for Control Bus and Emergency Lighting Service.



Exide-Chloride Cell: Two batteries, each of 60 such cells, provide protection in power house and in pump house of Washington's new 130 m.g.d. sewage treatment and sludge digestion plant.

THE District of Columbia has solved the problem of efficient sewage disposal.

At a cost of $3,600,000 it has built one of the country's outstanding sewage treatment plants at Blue Plains, on the outskirts of Washington. Capable of treating and disposing of one hundred and thirty million gallons of sewage daily, this plant is equipped with the most approved devices known to modern engineering practice. Indicative of this trend is the use of an internal combustion engine which operates on sludge gas to drive a 1000 k.v.a. generator.

It is not surprising therefore to find, both in the power house *and* in the pumping station, 60-cell Exide-Chloride Batteries for control bus and emergency lighting service.

It is significant that Exide-Chlorides are chosen for stationary services of various kinds in so many of the country's outstanding power plants. Write and let us explain why this battery's exceptional construction and performance has made it the choice of engineers all over the world.

THE ELECTRIC STORAGE BATTERY COMPANY

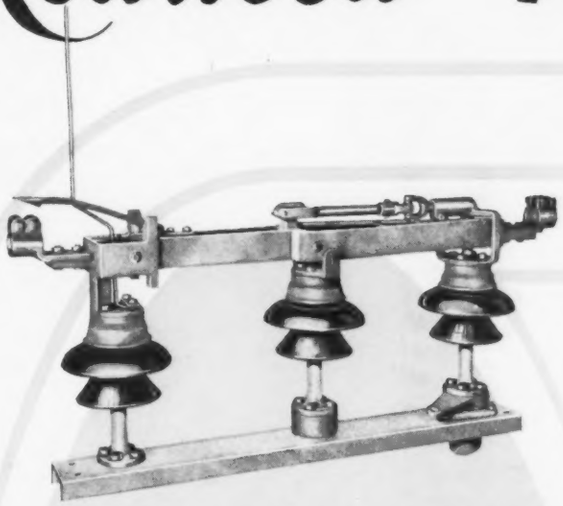
The World's Largest Manufacturers of Storage Batteries for Every Purpose

PHILADELPHIA

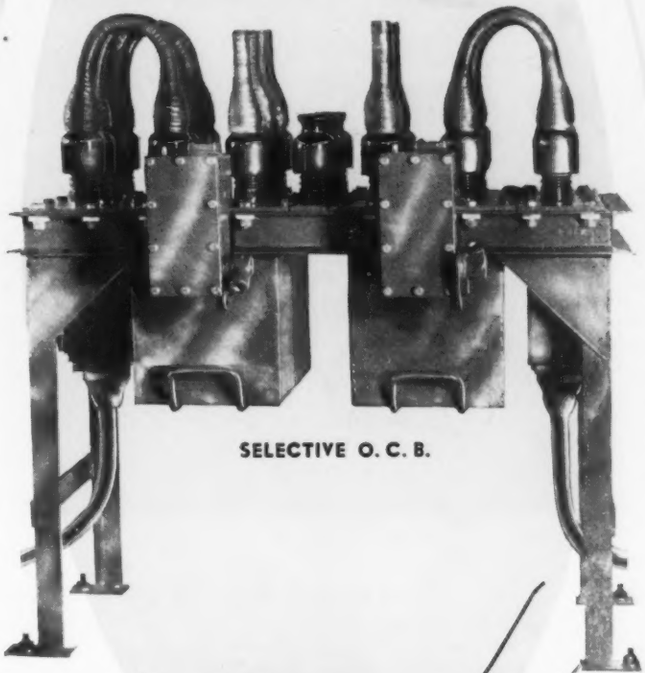
Exide Batteries of Canada, Limited, Toronto

Reduced Maintenance

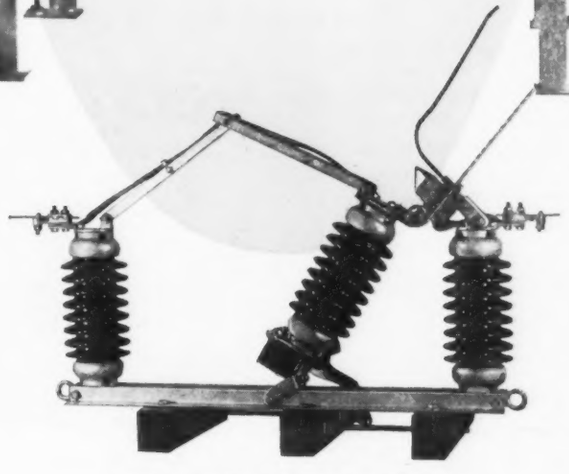
MEANS GREATER PROFITS··



8400 TYPE HIGH PRESSURE AIR BREAK SWITCH



SELECTIVE O. C. B.



8900 U. TYPE AIR BREAK SWITCH

Maintenance, and its constant drain on the resources of the electrical industry, has long been a vital factor in measuring the industry's success. For many years the Three E organization has been deeply concerned over your problems in maintenance, fully aware that your success must be definitely established before ours becomes possible.

To aid in this great enterprise of minimizing maintenance our engineers have carefully considered, in their designs, every phase of manufacture, construction, installation, operation, and upkeep. Our factories have furthered the cause by strict selection of materials, precision building and a rigid system of inspections and tests.

We are confident, therefore, that Three E line and station equipment will, as it has in the past, materially benefit you in reducing maintenance costs and in realizing greater profits. It will pay you to investigate.

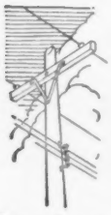
ELECTRICAL ENGINEERS EQUIPMENT CO. MELROSE PARK, ILL.

"Three E"

HIGH QUALITY LINE & STATION EQUIPMENT

BLUEPRINTS FROM A SPECIAL HANDBOOK

THREE-PHASE SECTIONALIZING STATION *featuring* TRIP-SAVER REPEATING FUSE SWITCHES

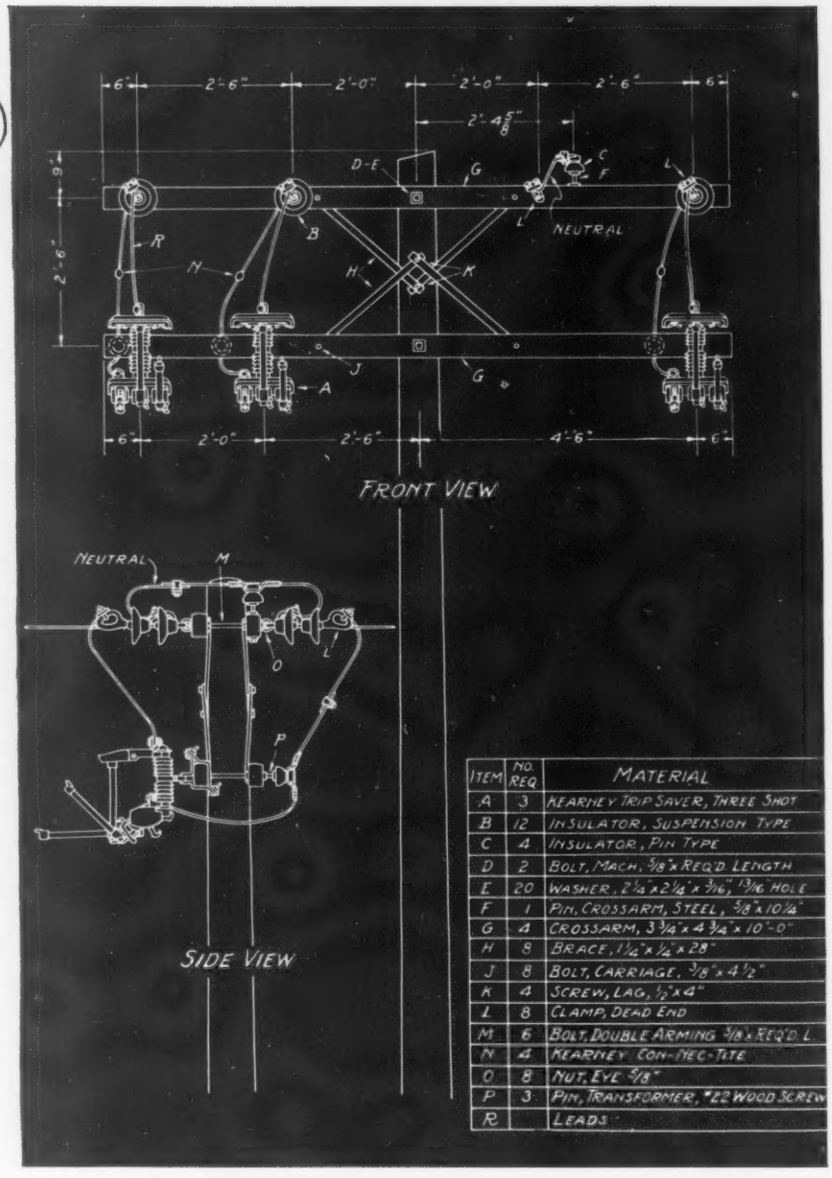


This is a typical method for sectionalizing a three-phase line. You can use Kearney Trip-Savers, as here shown, to prevent an outage on any customer's line between these switches and the source of supply. Should trouble occur on your line beyond the protected point, one fuse in the triple-shot Trip-Saver will function and then, immediately within 40 cycles, another cartridge will be in service.

You can easily see how the functioning of this switch may clear up an outage instantaneously that might otherwise, depending on location, cost you several hours loss in continuity plus other operating costs of patrol and maintenance.

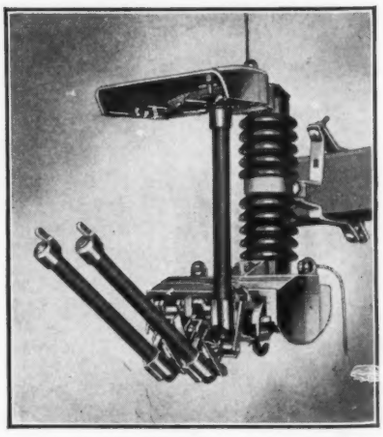
You'll agree with scores of other operating men that Kearney Trip-Savers are a superior repeating switch—and they effect genuine all-round savings. Write for further information.

Reprints of this ad and others — "Blueprints from a Special Handbook," will be sent on request.



ITEM	NO. REQ.	MATERIAL
A	3	KEARNEY TRIP SAVER, THREE SHOT
B	12	INSULATOR, SUSPENSION TYPE
C	4	INSULATOR, PIN TYPE
D	2	BOLT, MACH. 5/8" x REQ'D LENGTH
E	20	WASHER, 2 1/4" x 2 1/4" x 3/16", 13/16 HOLE
F	1	PIN, CROSSARM, STEEL, 5/8" x 10 1/4"
G	4	CROSSARM, 3 3/4" x 4 3/4" x 10'-0"
H	8	BRACE, 1 1/4" x 1/4" x 28"
J	8	BOLT, CARRIAGE, 5/8" x 4 1/2"
K	4	SCREW, LAG, 1/2" x 4"
L	8	CLAMP, DEAD END
M	6	BOLT, DOUBLE ARMING 5/8" x REQ'D L
N	4	KEARNEY CON-NEC-TITE
O	8	NUT, EYE 5/8"
P	3	PIN, TRANSFORMER, #22 WOOD SCREW
R		LEADS

The Kearney Trip-Savers shown in this specification are the latest design, Type D. They are available in 5000 to 15000 V., 100 Amp., and larger sizes, provided on station post insulators, 7500/12500Y Grd. to 34,500 V., 100 Amp.



The Mark of JAMES R. KEARNEY CORPORATION ST. LOUIS, MO. *Quality Products*

DESIGNED AND MANUFACTURED BY

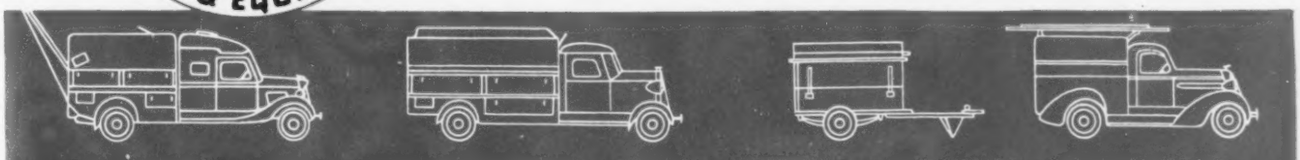
JAMES R. KEARNEY CORPORATION: 4236-42 CLAYTON AVE., ST. LOUIS, MO.

THE BAKER STEEL EQUIPMENT INCLUDES—

Line Construction and Maintenance Bodies; Light, Medium and Heavy Duty • Telephone Installation and Service Bodies • Cable Splicer Trailers • Pole and Material Trailers • Aerial Ladder Units • Winches and Power Take Offs • Pole Derricks • Reels

PUBLIC UTILITY **Baker** BODIES & EQUIPMENT

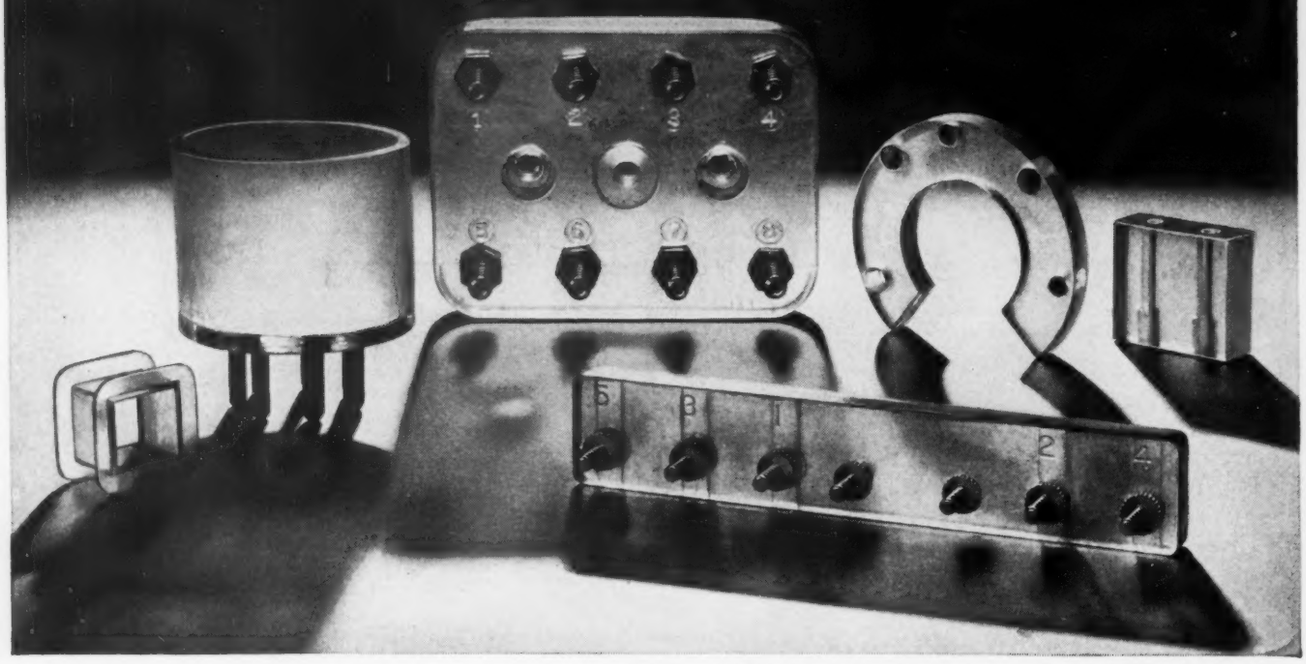
● Embracing several wholly new developments, Baker Steel Line Body No. 1480, shown above, marks a far step ahead in line body design. Its exclusive features, never before available, afford substantially greater efficiency, higher safety and improved appearance. ● You will find these new features highly important in considering your line body requirements for 1938. *Write for catalog and complete details.* THE BAKER-RAULANG COMPANY, *Body Division, West 80th Street, Cleveland, Ohio.*



BODIES AND EQUIPMENT FOR EVERY UTILITY PURPOSE

Announcing...

BAKELITE POLYSTYRENE LOW-LOSS MATERIAL



Advantageous applications of Bakelite XMS-10023 Material include: coil forms, tube bases, terminal blocks, spacing washers, connector blocks.

AFTER exhaustive research and development in its laboratories, Bakelite Corporation now contributes to electrical science and industry a superior thermo-plastic material for low-loss purposes.

Possessing the extraordinary properties in a molded plastic, of a power factor of less than .0002 at frequencies of 60 to 1,000,000 cycles, and a dielectric constant of 2.60 at the same frequencies, this new Bakelite Polystyrene molding material offers marked advantages for many electrical products and equipment parts. Its dielectric strength is more than 500 volts per mil; its resistivity, over 10^8 megohm centimeters; and its arc-resistance, 240 to 250 seconds.

In addition to these electrical advantages, Bakelite XMS-10023 material provides the important merits of: uniformity in molding; freedom from crazing or other surface difficulties; permanence of dimension at temperatures under 100° F; and high resistance to water, acids and alkalies. Its durability and toughness are indicated by its A.S.T.M. Impact Strength of .16 foot pounds, and flexural strength of more than 7000 pounds per square inch.

Opportunities for the improvement of high-frequency apparatus through application of this new Bakelite molding material are practically unlimited. We invite electrical engineers and manufacturers to write for further data on Bakelite Polystyrene Low-Loss material.

BAKELITE CORPORATION, 247 PARK AVENUE, NEW YORK, N.Y.

BAKELITE CORPORATION OF CANADA, LIMITED, 163 Dufferin Street, Toronto, Canada *West Coast:* Electrical Specialty Co., Inc., 316 Eleventh Street, San Francisco, Cal.

BAKELITE

REGISTERED U. S. PAT. OFF.

"The registered trade marks shown above distinguish materials manufactured by Bakelite Corporation. Under the capital "B" is the numerical sign for infinity, or unlimited quantity. It symbolizes the infinite number of present and future uses of Bakelite Corporation's products"

THE MATERIAL OF A THOUSAND USES

beauty is in utility Modern engineering and industrial design heavily emphasizes functionalism. That product, all parts of which are designed for most efficient performance, is most beautiful. By this standard, Line and Station Posts are beautiful insulators. And being insulators that look well, they are insulators that perform well. For a recounting of the Line and Station Posts' many superiorities, write for Lapp Bulletin No. 123.

APP INSULATOR CO. INC

LAPP INSULATORS

LE ROY - N.Y. - U.S.A.

USE G & W HEAVY DUTY POTHEADS

SIMPLE DESIGN
RUGGED CONSTRUCTION
TRUSTWORTHY OPERATION

TYPE "T"
CAPNUT
15000 VOLTS
2000 Mcm
STYLE "W"
BASE
STYLE 8 LUG

RESISTOYL
LONG-LIFE
OIL AND WATER
PROOF
GASKETS
USED
THROUGHOUT

G & W ELECTRIC SPECIALTIES

Originators and pioneers of equipment for sealed methods of making terminal and overhead electric distribution

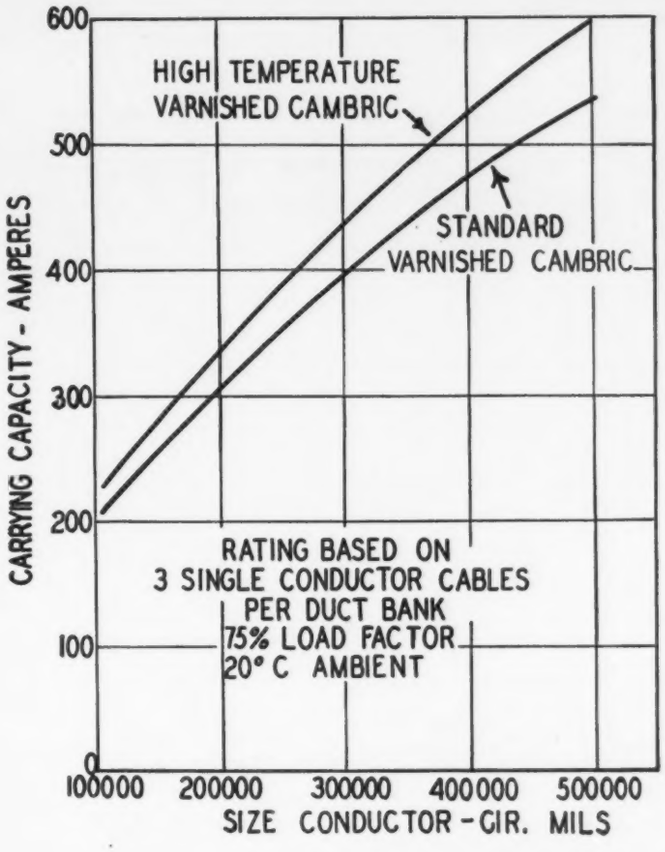
Over 4000 different sizes and ratings of potheads are listed in our Bulletin 362. If you do not find your particular requirements covered, we can make exactly what you want at a reasonable price.

G & W ELECTRIC SPECIALTY CO.

Cable Terminating, Sectionalizing and Protecting Equipment

7780 DANTE AVENUE, CHICAGO, ILL., U.S.A.

Also made in Canada by Powerlite Devices, Ltd., Toronto



SIZE for SIZE

Simplex High-Temperature Varnished Cambric Insulated Cables Carry More Current

Simplex High Temperature Varnished Cambric insulation has been developed to meet the demand brought about by economic conditions for varnished cambric cables that would be able to operate safely at higher temperatures and thus carry more current. This was accomplished by developing a cambric insulation that would withstand the higher temperatures and still have as good dielectric properties as the conventional types of Varnished Cambric. This new insulation will operate at temperatures (in°C.) up to 90 — E* as compared with 75 — E* for the regular cambric.

The chart above shows clearly that the new high temperature varnished cambric insulation will enable you to carry more current, size for size, than was possible before. High temperature varnished cambric should be used wherever it is possible to justify its slightly higher cost.

A new data sheet covering both the new high temperature and the regular varnished cambric has been prepared. Fill in the coupon below and we will send one to you immediately.

*E = operating voltage in K.V. between conductors in the case of multiple-conductor cable or between conductor and ground in the case of single-conductor cables.

Simplex Wire & Cable Co., 79 Sidney St., Cambridge, Mass.

SIMPLEX VARNISHED CAMBRIC CABLES

for power transmission at high temperatures

Name_____

Company_____

Street_____

City and State_____

EW 12-18-37*

IT'S A LONG TIME BETWEEN POLES

WITH • • •

COPPERWELD -

ANACONDA WIRE AND CABLE CO. — COPPERWELD STEEL C

IT'S A LONG TIME BETWEEN POLES with Copperweld-Copper Conductors — because of this, many thousands of farmsteads will enjoy, for the first time this Christmas, the benefits of electricity and the cheer of well lighted homes.

Without high strength conductors, long spans, and their attendant economies, many rural lines could not have been built. The lighter sizes of Copperweld-Copper Conductors, such as 8A (Number 8 A.W.G. Copper equivalent), have also played an important part in the reduction of the cost of rural lines.

And the low maintenance cost of Copperweld-Copper Conductors will go a long way toward assuring the profitable operation of rural lines once the lines are in service.

The trend is to Copperweld-Copper Conductors — with longer spans and fewer poles.

SAVE WITH SAFETY

WHEN BUILDING RURAL LINES

COPPER CONDUCTORS

MANUFACTURED AND SOLD BY

— KENNECOTT WIRE AND CABLE CO. — PHELPS DODGE COPPER PRODUCTS CORP.

Detailed Data on The Light and Power Industry *at Your Finger Tips*

McGRAW CENTRAL STATION DIRECTORY

All the information you need to intelligently contact this field

★

CONTENTS

Names and addresses of independently owned electric light and power companies in the United States, Canada and United States Possessions.

Names and addresses of municipally owned electric light and power systems in the United States, Canada and United States Possessions.

Names and addresses of affiliated, holding, controlling or managing companies with complete lists of properties controlled or managed by each.

Names and addresses of principal officials of holding and managing companies.

Names and addresses of officials and chief operating men for all operating companies including:

Presidents
Vice Presidents
General Managers
Chief Engineers
Electrical Engineers
Mechanical Engineers
General Superintendents
Plant Superintendents
Plant Engineers
Superintendents of Distribution
Superintendents of Transmission
Commercial or New Business Managers
Merchandising Managers
Purchasing Agents
Division or District Managers
Division or District Superintendents
Division Merchandising Managers

For each operating company the following information is presented:

Generator Capacity in kva. or kw.
Kind of Prime Mover and Capacity in hp.
Amount of power purchased in kw.-hrs.
Type of current distributed, number of wires, phase and cycles.
Number of meters served.
Location of power plants.
Location of districts or divisions.
Complete list of towns (having a population of 500 and over) served.

National and State Public Utility Commissions with addresses, names of commissioners and principal assistants.

A complete alphabetical index of companies and municipal systems giving location by city and state.

The McGraw Central Station Directory gives complete information on the organized agencies which furnish electric light and power service to communities of 500 or greater population in the United States, Canada and United States Possessions.

It lists all operating and holding companies, arranged alphabetically according to cities and states, together with the names and titles of operating officials and other executives, names of the cities served by each company, capacity and location of plants, amount of power purchased, type of current distributed, number of meters served.

National and State Commissions are also listed, together with their commissioners and principal assistants.

More than 800 pages—handy size—4½″x 8½″—printed in clear readable type—bound in flexible covers that resist hardest usage — fully thumb-indexed by states. Price $25.00 per copy with 10% discount on orders for 5 copies or more.

McGRAW-HILL PUBLISHING CO., INC.
Catalog and Directory Division
330 West 42d Street, New York, N. Y.

EXPERIENCE WILL CHOOSE THE S&C FUSE . . .

I HAVE HAD EXPERIENCE WITH ALL TYPES OF EQUIPMENT AND I ELIMINATE COMPROMISE WITH SERVICE BY SPECIFYING S&C FUSES.
THANKS FOR THE ADVICE – IT IS EVIDENT THAT I SHOULD PAY MORE ATTENTION TO THIS SUBJECT IN THE FUTURE.

ANOTHER YEAR of Proof Added

● Another year has just been added to the many that have proven the dependable protective qualities of S & C Fuses. —Power engineers find that as service requirements become more stringent, S & C Fuses are constantly improved to meet the demands.

When designing and constructing substations—be sure to use S & C Fuses. Another year has just added *further proof* of their reliability—S & C Fuses cost less than other circuit interrupting equipment of equivalent performance.

SCHWEITZER & CONRAD, INC.

435 Ravenswood Avenue • CHICAGO, ILLINOIS • Manufactured in Canada by Powerlite Devices, Ltd., Toronto, Canada

S&C

WAGNER MOTORS Are Built for STRENGTH

LOST! one customer's good will

IT doesn't take much to make a customer turn against you. He's always ready to believe you don't know your business.

15 YEARS EXPERIENCE OFFERED TO YOU

The handling of all customer contacts is one of the many vital problems Remington Rand is prepared to help you solve. A specialized Public Utility Department offers a wealth of experience unmatched by any other organization in the world.

SERVICE TO CUSTOMERS SPEEDED UP

Remington Rand can speed up the handling of customer contacts for you—and at the same time reduce this part of your operating cost. Your record procedure and office layout will be coordinated for complete, immediate answering of any questions a customer asks, whether he phones or calls in person. For example, Remington Rand methods produce duplicate bills in 30 seconds or less—ordinarily a 6 to 10 minute job. And instead of the usual 8 to 12 minutes, one minute is the maximum time for gathering full data on "high bill" complaints. This kind of speed is what eliminates congestion on your busy days.

INCREASES CONFIDENCE—IMPROVES MORALE

Remington Rand customer contact methods enable your employees to act quickly, intelligently and decisively. Responsibilities are made clean-cut and definite. Employees have at their fingertips *all* the information they need.

NO INCONVENIENCE IN CHANGE-OVER

Remington Rand's recently enlarged force of specialists can study present methods, suggest changes if needed, establish practical working standards, and train your employees all without upsetting normal office routine.

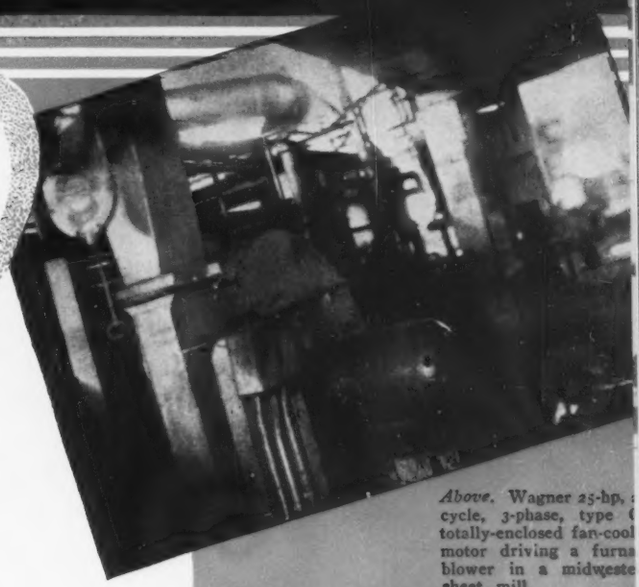
PHONE OR WRITE FOR PROOF

Hundreds of utility companies have improved all operating phases and cut costs by calling in Remington Rand. Let us prove what we've done for them by presenting actual names, facts and figures to you. Phone the Remington Rand office in your city or write Remington Rand Inc., Public Utility Division, Dept. U-1123, Buffalo, N. Y.

OK..it's from **Remington Rand**

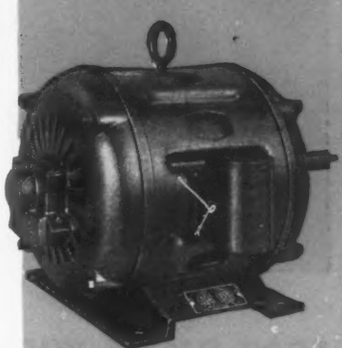
VAGNER MOTORS Are Built for STRENGTH

Where Dependable Service Is Essential



Above. Wagner 25-hp, cycle, 3-phase, type totally-enclosed fan-cool motor driving a furna blower in a midweste sheet mill.

Left. Wagn type CP tot ly-enclosed fa cooled mot —ideal operation in a mospheres la en with du fumes, a moisture.



Left. Wagn type RP squi rel-cage pol phase motor it will me your requi ments of pe formance a dependability.

Use Wagner Motors

Wagner has furnished motors for all types of industry for many years. All Wagner motors are built to exacting electrical and mechanical specifications, which embody characteristics and features that give them long life, dependability and added protection against failure. Ruggedness characterizes every detail of their construction. They are particularly noted for their good performance and stamina.

Wagner motors are available with the proper characteristics to fit varying service requirements—being obtainable in all electrical and mechanical types; in single or multi-speed; in totally-enclosed or open frames.

Below. Wagner 25-hp, type RP, 25-cycle, polyphase driving an uncoiler. Motor is equipped with double shaft extension, one extension driving uncoiler and the other extension provided with a brake.

Write today for Bulletin 182 on Polyphase Motors

Wagner Electric Corporation

6400 Plymouth Avenue. Saint Louis. U.S.A.

ML237-4D

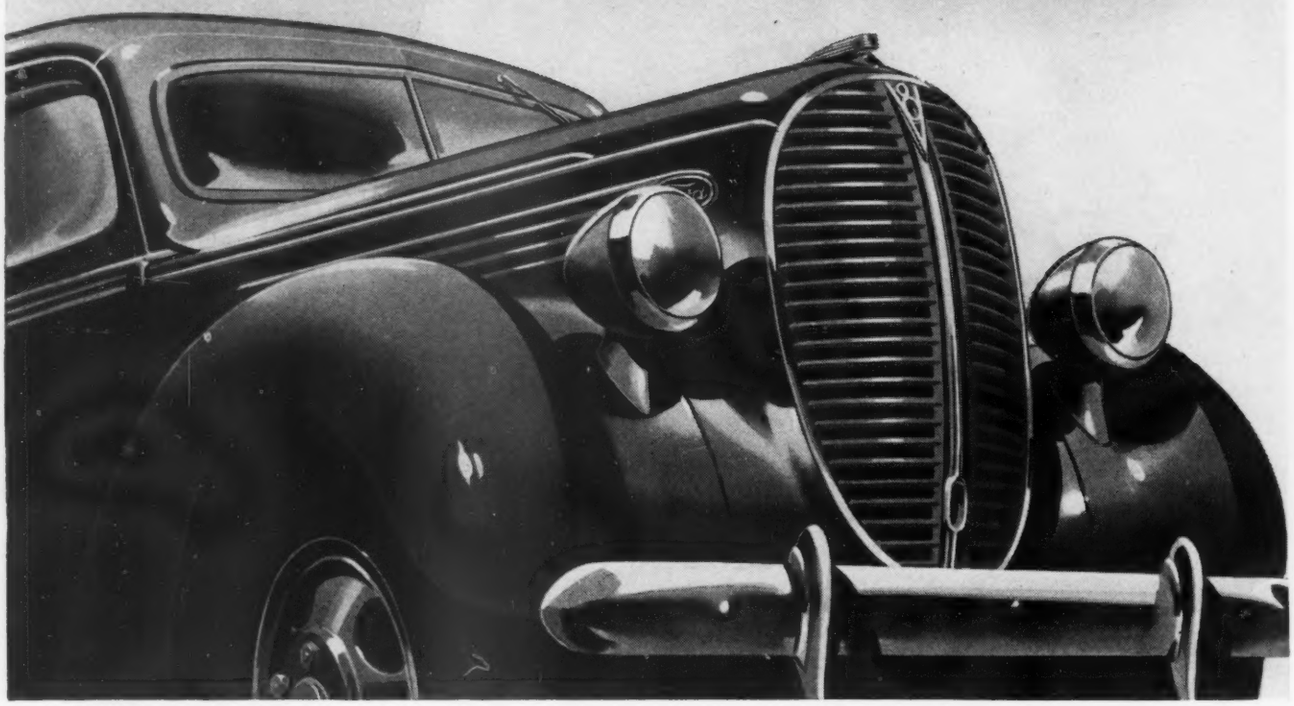
Wagner Motors Are Noted

or Their Good Performance and Dependability

ANNOUNCING THE 1938 LINE OF

FORD V-8 TRUCKS

INCLUDING A NEW One-Tonner



FORD OFFERS WIDE RANGE. FAMOUS V-8 ENGINE BRINGS NEW ECONOMY TO LOADS IN ONE-TON RANGE

THE Ford Motor Company has built more than four million trucks. With this great background of experience, it means something to say that the 1938 Ford V-8 Trucks are the finest Ford has ever built.

Here is the widest range of types and sizes in all Ford history. The big 134-inch and 157-inch wheelbase Ford V-8 Trucks are designed to do the work of heavier, more expensive units—and do it faster, at lower cost. An entirely new line of 122-inch wheelbase one-ton trucks has been added to bridge the gap between the larger trucks and the new 112-inch wheelbase commercial cars. For practically every hauling and delivery requirement there is now a unit that gives the high Ford standard of dependability and economy!

The 1938 line of trucks and commercial cars are all newly styled. They have an impressive new front end, a sturdy new grille, new headlamps, massive full-skirted fenders. Their smart, modern appearance is a definite asset to any business.

Other important advances for 1938 are a new 134-inch wheelbase in the big truck line . . . a new frame width for both the 134-inch and 157-inch wheelbase units . . . 7.50—20 dual tire and wheel equipment available at extra cost . . . improved brakes and easier steering . . . stronger construction in vital parts.

The new one-tonners and the commercial cars offer a choice of the 85 or 60 horsepower V-8 engine.

Your Ford dealer invites you to see the new line—and to make an "on-the-job" test with your loads and your driver.

LOW FIRST COST IS ONLY THE START OF FORD ECONOMY

FORD'S SEVENTH YEAR OF V-8 SUCCESS

EXTRA YEARS OF LIFE FOR CONTROL BUS BATTERIES

. . . WITH *Rectomatic* CHARGING!

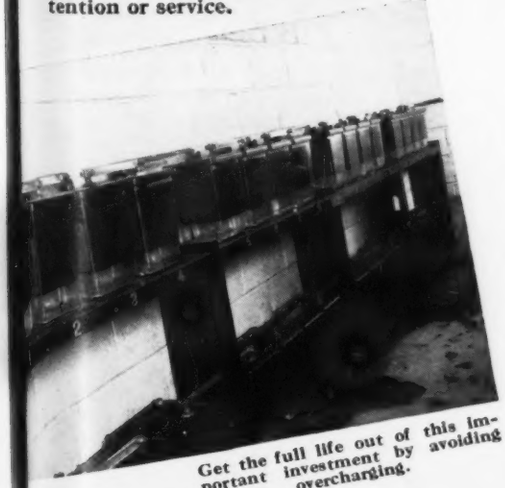
Rectomatic FEATURES THAT EXTEND BATTERY LIFE

IMPOSSIBLE TO OVERCHARGE The "silent watchman" assures longer battery life because it maintains battery voltage within 1% of rating at all times.

100% AUTOMATIC—The charging rate adjusts itself to demands made on the battery.

NO MOVING PARTS—Unlimited charging life because there is nothing to wear out or burn out.

DEPENDABLE — Nothing to renew or repair. Requires no attention or service.



Get the full life out of this important investment by avoiding overcharging.

When Westinghouse engineers perfected the amazing new Rectomatic Charger for control bus batteries and other floating battery service, they made it possible to get years of extra battery life.

This is because the Rectomatic with its "silent watchman" makes it impossible to overcharge . . . *banishes the cause* of excessive shedding of active material with the resulting shortening of battery life.

Not only does the Rectomatic automatically adjust its charging rate to the demands on the battery, but it is so accurate that it holds the battery to within 1% of rated voltage.

Rectomatic is particularly well adapted to unattended substations because it has no moving parts, nothing to wear out or burn out.

Investigate today the possibilities of the Westinghouse Rectomatic Charger for extra battery life. Call your Westinghouse office or write for 27-435 to Dept. 7N, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pennsylvania.

J 20438

Westinghouse *Rectomatic* Charger

W WESTINGHOUSE ELECTRIC

INVESTIGATE FOR '38

★ INVESTIGATE THE LATEST WESTINGHOUSE IMPROVEMENTS BEFORE PURCHASING EQUIPMENT FOR NEW LOAD PEAKS

COORDINATED INSULATION *protects*

OP CURRENT TRANSFORMERS

The Type OP Current Transformer, designed particularly for outdoor substation construction, now features scientifically coordinated insulation. Affording a most effective safeguard against impulse, or lightning, surges, coordinated insulation performs three valuable services for you . . .

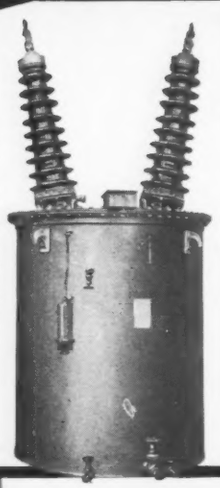
1 Reduces Maintenance
2 Eliminates Costly Service Interruptions
3 Protects your Capital Investment

And, as an added protection, small, low-voltage Autovalve lightning arresters, mounted at the top of the condenser bushing, guard the primary winding.

All ratings of the Type OP current transformer have series-parallel primary windings which give two ratios on the secondary side. If required, double secondaries can be supplied, permitting very accurate metering on one secondary, and relay or breaker operation on the other.

Type OP Transformers are available for primary voltages up to 161,000 volts; in currents ratio up to 800—5 amperes. J 70043

For more detailed information on these or other Westinghouse Transformers, contact the nearest Westinghouse Representative or address Westinghouse Electric & Manufacturing Company, Room 7-N, East Pittsburgh, Pa.



The Type VP *Potential* Transformer, companion to the Type OP, is also protected by completely coordinated insulation. It is built to the same rigid standards as Westinghouse Power Transformers. Ratings up to 161,000/115 volts.

Westinghouse

★ INVESTIGATE FOR '38 ★ INVESTIGATE THE LATEST WESTINGHOUSE IMPROVEMENTS BEFORE PURCHASING EQUIPMENT FOR NEW LOAD PEAK

THIS ONE TIMING RELAY CAN OFTEN REPLACE THREE

THE TK TIMING RELAY

● The TK Timing Relay can measure time intervals—*accurately*—from only 2 seconds up to 50 minutes. No other Timing Relay provides such a wide range of timing intervals. For this reason a single TK has often replaced two or three individual relays of less timing range—doing the work of three and doing it well.

OTHER ADVANTAGES

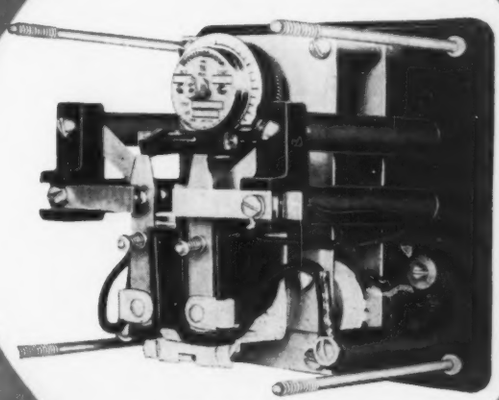
HIGH ACCURACY; since the synchronous motor which drives the timing mechanism stays perfectly "in step" over a 20% *plus or minus* variation in voltage, timing accuracy is uniformly excellent.

SILVER CONTACTS; Two sets of main contacts are used in the TK. Both are large in size and made of chemically pure silver. They will carry 12 amperes continuously and 30 amperes for one minute.

QUICK RESET; at the *maximum* time setting (50 minutes) the TK resets and is ready for another operation in less than *one second.*

The Relays are supplied for 115, 230, and 460 volt service; for frequencies of 25, 50, and 60 cycles. For further information, write for Catalog Section 41-366. Address Westinghouse Electric and Manufacturing Company, Department 7-N, East Pittsburgh, Pennsylvania.

J 40114



THE TK TIMING RELAY
(with cover removed)

W
WESTINGHOUSE ELECTRIC

Westinghouse

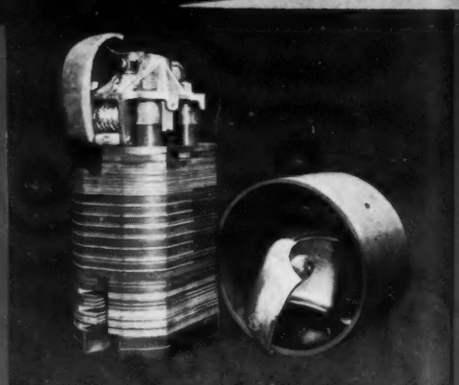
ARCS EXTINGUISHED FASTER THAN EVER with Westinghouse Oil Circuit Breakers

● When "De-ion Grids" were first applied, Westinghouse Oil Circuit Breakers established new standards of performance, but Westinghouse engineers did not settle back and call the job finished. Steadily they have sought to raise these standards.

As the result of their efforts, Westinghouse Oil Circuit Breakers today are equipped with improved "De-ion Grids" that still further reduce arcing time. Breaker performance has been made even more reliable, and circuits can be protected more effectively at lower over-all cost.

Improved "De-ion Grids" represent only one of the recent improvements that give you smaller, faster, better Westinghouse Oil Circuit Breakers. Ask your Westinghouse representative for complete information about these money-saving advances in breaker design. Westinghouse Electric & Manufacturing Company, Room 7-N, East Pittsburgh, Pa.

J 60142



The improved "De-ion Grid" for Westinghouse High-Voltage Oil Circuit Breakers. Arcs are snuffed out so quickly that contact life is lengthened, sludging and deterioration of oil reduced, and maintenance costs lowered. Provides positive circuit protection. System stability is increased. Improved "De-ion Grids"—exclusively Westinghouse—may be used to modernize old Westinghouse Circuit Breakers.

Westinghouse

*INVESTIGATE FOR '38

*INVESTIGATE THE LATEST WESTINGHOUSE IMPROVEMENTS BEFORE PURCHASING EQUIPMENT FOR NEW LOAD PEAKS

"O K Hemingray"

MEANS THE END OF INSULATION TROUBLES

● Brass-bushed for greater strength, perfect threads and full protection against pin expansion.

● Hemingray provides many advantages: greater mechanical strength . . . sustained dielectric strength . . . unaffected by sudden temperature changes . . . withstands maximum insulator pin expansion . . . never ages or deteriorates . . . controlled uniformity of product . . . all surfaces impervious to moisture . . . tougher — withstands rough handling . . . clear, flawless for easy inspection. Ratings up to 15,000 volts.

● **Utility engineers and purchasing agents from coast to coast confidently say, "O K. Hemingray" because this tough insulator abundantly fulfills the requirements of distribution and rural power lines. Characterized by high quality, high efficiency, long life and low cost, Hemingray Brass-Bushed Glass Insulators have become the standard of comparison in performance cost. They are now used by more than 200 power companies to provide dependable service, to lower operating costs and to reduce the original expenditure for insulation equipment.**

Their performance in service backs up the judgment of the man who buys them.

If you aren't using the new Hemingrays on your distribution lines, order some today from your jobber, or write for samples and prices. Owens-Illinois Glass Company, Hemingray Division, Muncie, Ind.

FOR MODERN POWER LINE INSULATION

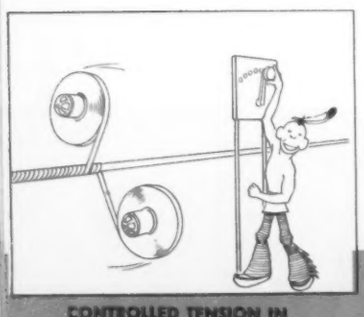
Order HEMINGRAY Glass INSULATORS

ONE of the many large impregnating tanks at Hastings-on-Hudson plant of Anaconda Wire and Cable Company, showing the McLeod Gauge by which the degree of vacuum is measured.

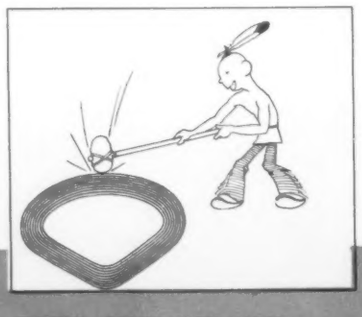
ANACONDA
from mine to consumer

Anaconda

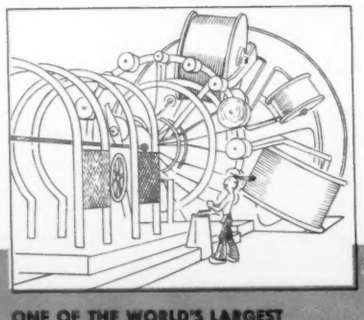
General Offices: 25 Broadway, N. Y.



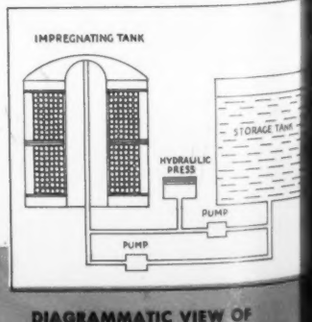
CONTROLLED TENSION IN PAPER TAPING



TIGHTLY APPLIED PAPER TAPES

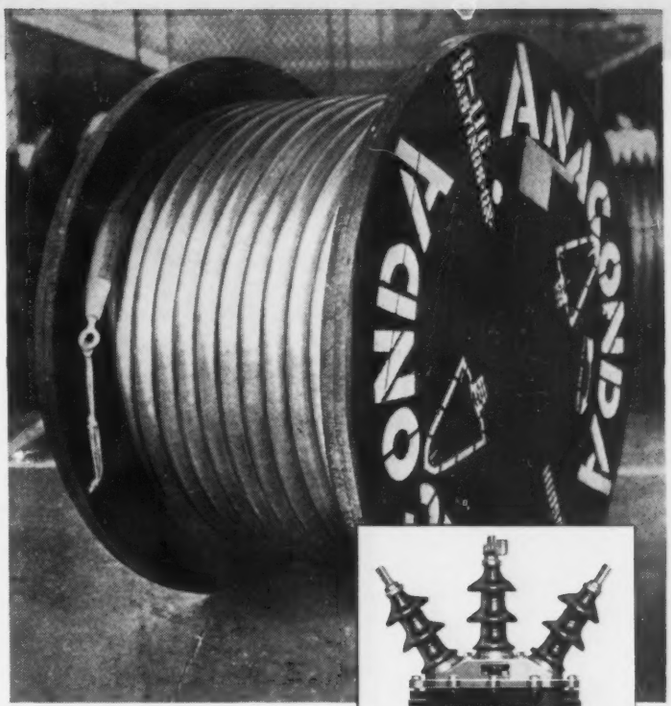


ONE OF THE WORLD'S LARGEST CABLING MACHINES



DIAGRAMMATIC VIEW OF IMPREGNATING SYSTEM

Revolutionary Improvements in PAPER-LEAD CABLE



Better performance assured through the exclusive TAYLOR PROCESS

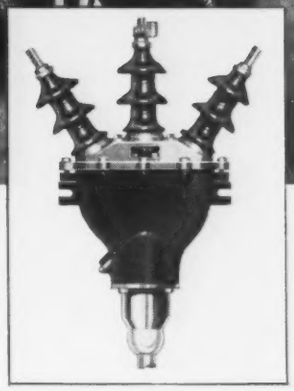
A REVOLUTIONARY combination of improvements makes Anaconda Paper-Lead Cable *the* outstanding buy of today.

By the unique patented Taylor Process, combined with electrical control at every step, a higher degree of uniformity in cable insulation is achieved.

In this huge tank, reels of ANACONDA paper cable are subjected to extremely high vacuum and impregnated with oil under both this high vacuum and later, hydraulic pressure. The result is complete and uniform impregnation — every fibre — high dielectric strength and long life.

It is typical of the results which years of laboratory development, advanced manufacturing technique, and the proper selection of high-grade component materials can contribute to cable manufacture.

The cable you buy should be modern! Let us tell you more about the fascinating story of Paper-Lead and other ANACONDA improvements in cable manufacture.



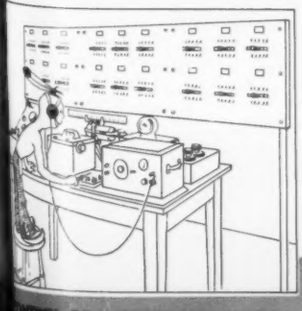
Reliable Accessories Pay!

Service continuity of a power cable installation can be assured when the same high standard is established for both accessories and power cable.

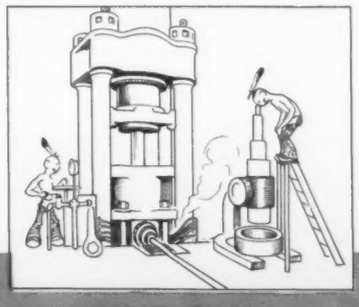
For reliable service, the cable and its accessories must be considered jointly, not separately. It pays to protect a power cable investment with efficient cable terminals. Write for Cable Accessories Catalogue No. 371. 37559

Wire & Cable Company

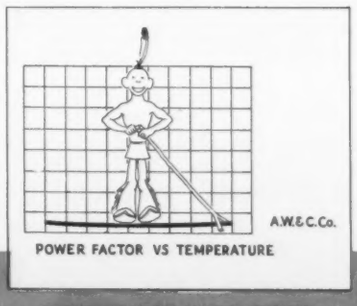
Chicago Office: 20 North Wacker Drive · *Sales Offices in Principal Cities*



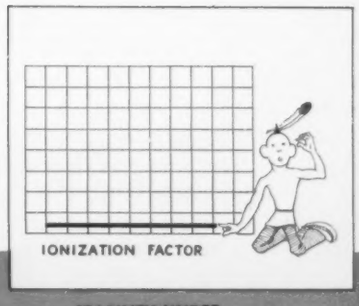
NTROL OF IMPREGNATION BY ELECTRICAL MEASUREMENT



LEAD SHEATHING— METALLURGICAL CONTROL

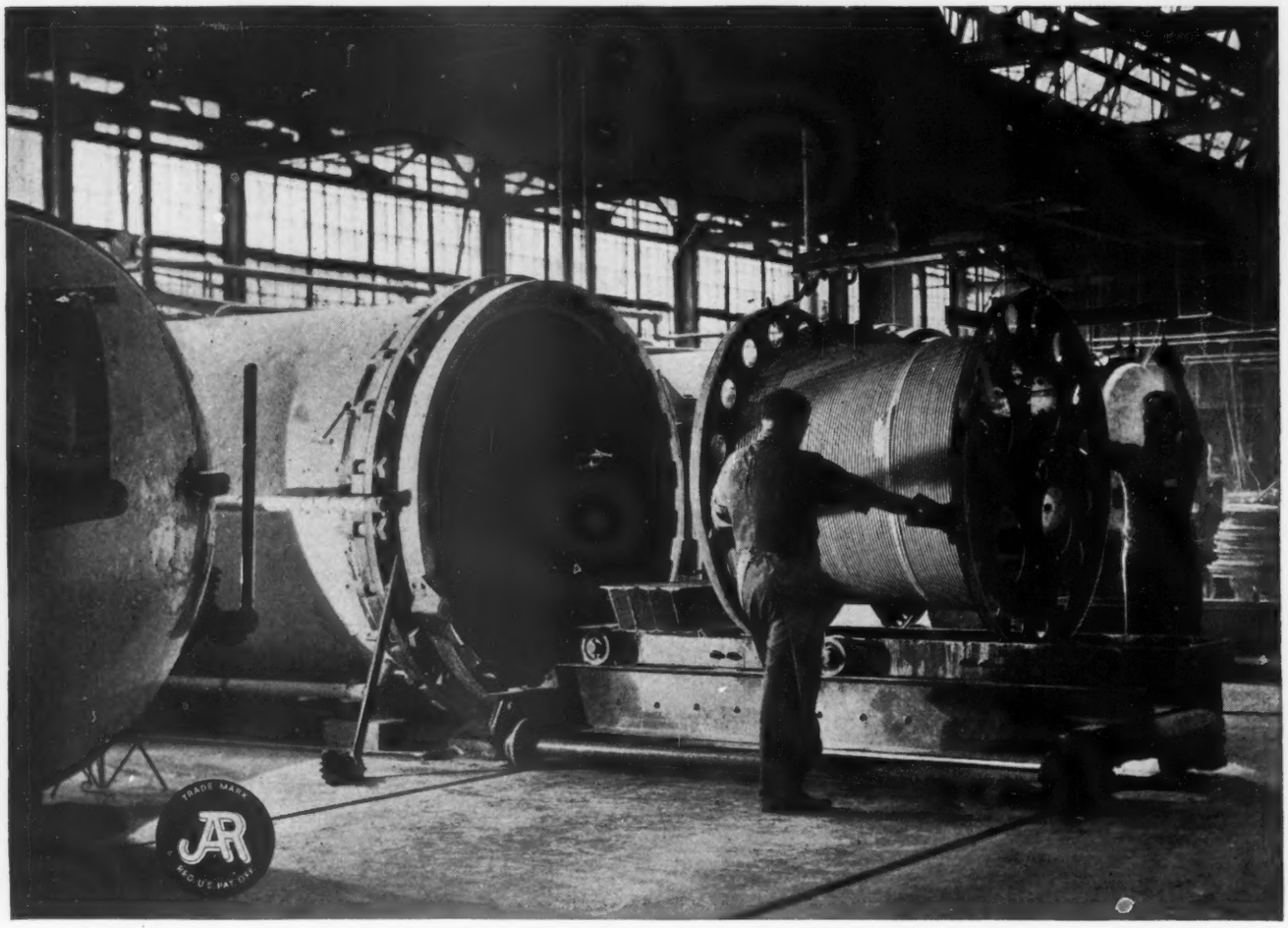


POWER FACTOR CURVE SHOWS HIGH QUALITY



STABILITY UNDER LONG-TIME AGING

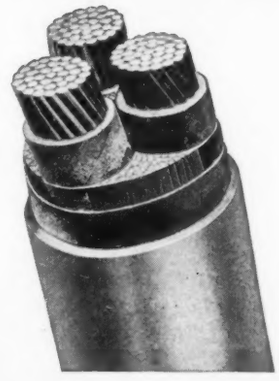
Proper Vulcanization
OF RUBBER INSULATED POWER CABLE
is a "fine art" at Roebling



HERE is an open vulcanizer ready to receive a reel of rubber covered wire for power cable. Under automatically controlled heat for a predetermined time, the rubber will come out properly vulcanized—to meet required electrical and physical qualities.

This is but one of the many processes of manufacture where close control and long experience guard the high quality of Roebling Rubber Insulated Power Cables.

These cables are available in a wide range of sizes and voltages and grades of insulation for power transmission, lighting and signal service—underground submarine or aerial.



JOHN A. ROEBLING'S SONS COMPANY
TRENTON, N.J. *Branches in Principal Cities*

ONLY A FINE PRODUCT MAY BEAR THE NAME ROEBLING

60 Amp. Service at Practically 30 Amp. Cost!

ith the New Cutler-Hammer Bulletin 334H17 FUSELESS MAIN SWITCH

Of tremendous importance to the Utility, the Contractor and the Wholesaler alike, the Newest Cutler-Hammer development, Bull. 4334H17 Fuseless Main Switch, permits the highly desirable 60 Amp. service at scarcely more than 30 Amp. cost! The charts tell the story!

PRESENT 30 AMP. E. M. T. (CONDUIT) METHODS

	Quant.	Description	Unit Cost	Net Cost
(1)	1	C-H 4331H7 SERVICE SWITCH	$4.00 ea.	$4.00*
(2)	2	30 amp. plug fuses	.04 ea.	.08
(3)	4	15 amp. plug fuses	.04 ea.	.16
(4)	11 ft.	¾" E.M.T.	7.05 C	.78
(5)	36 ft.	#8 R. C. Wire	27.30 M	.98
(6)	18 ft.	#8 Bare Wire	21.80 M	.39
(7)	1	¾" Serv. head	.43 ea.	.43
(8)	1	¾" Serv. ell	.42 ea.	.42
(9)	3	¾" E.M.T. Conn.	10.20 C	.31
(10)	1	Grd. Clamp	.32 ea.	.32
(11)		Misc., Lock Nuts, Bushings, etc.	.80	.80
			TOTAL	$8.67

*Average contractor cost

NEW 60 AMP. E. M. T. (CONDUIT) METHODS

	Quant.	Description	Unit Cost	Net Cost
(1)	1	4334H17 C-H SWITCH	$4.38	$4.38*
(2)	11 ft.	1" E.M.T.	10.13 C	1.11
(3)	36 ft.	#6 R. C. Wire	46.40 M	1.67
(4)	18 ft.	#8 Bare Wire	21.80 M	.39
(5)	1	1" Service head	.56 ea.	.56
(6)	1	1" Service ell	.56 ea.	.56
(7)	3	1" E.M.T. Conn.	17.35 C	..52
(8)	1	Grd. Clamp	.32 ea.	.32
(9)	4	15 Amp. Plug fuses	.04 ea.	.16
(10)		Misc., Lock Nuts, Bushings, etc.	.90	.90
			TOTAL	$10.57

*Average contractor cost

erfectly Timed to gear in with the new 1937 N.E.C., ll. 4334H17 is the greatest single contribution to rvice switch design and to improved wiring standards. is advanced type switch has the following outstand- g features: No main fuses; unconcealed toggle itch operated from outside the case; silver-to-silver ntacts; compact design, universal mounting, all in- allation and service operations from the front per- tting gang mounting; modern styling; mar proof ish; etc.; etc.; etc. Feature and push Bull. 4334H17 r lower costs, greater sales, decreased servicing, emendous customer satisfaction. CUTLER-HAMMER, c., *Pioneer Manufacturers of Electric Control Apparatus,* 13 St. Paul Ave., Milwaukee, Wis.

leets the NEW 1937 ational Electric Code
(see article 2371-a-4)

CUTLER-HAMMER
SERVICE EQUIPMENT
C-H

And for Cable Service!

Present 30 Amp. method
Total average cost $8.21
New 60 Amp. method
Total average cost $9.10

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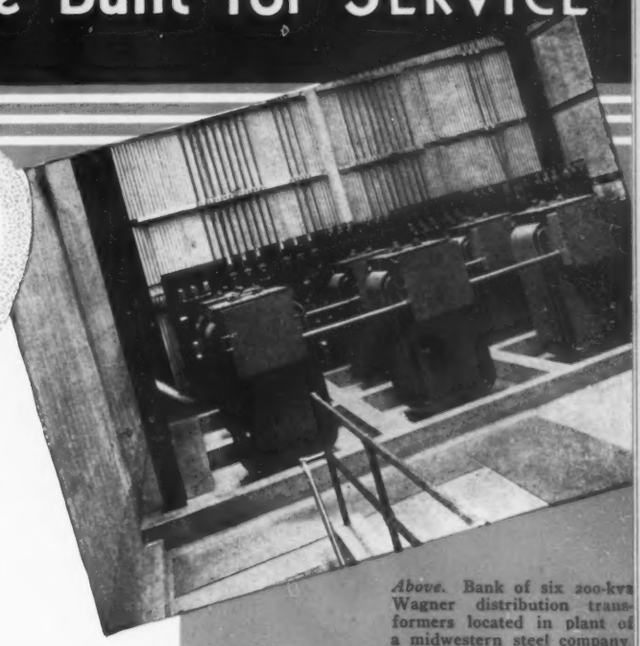
/AGNER TRANSFORMERS Are Built for SERVICE

Where Dependable Service Is Essential

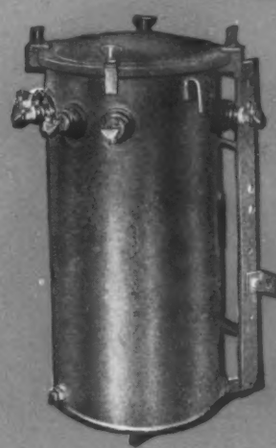


Above. Bank of six 200-kva Wagner distribution transformers located in plant of a midwestern steel company. These transformers are equipped with junction boxes on both the high and low voltage sides.

USE Wagner Transformers

Wagner transformers are of sturdy construction and are liberally designed to withstand abuses and to operate at all times at high efficiency. They meet demands for reliable service under all types of load conditions found.

The Wagner line includes every type and size of power and distribution transformers, enabling Wagner to supply all your requirements. Call on Wagner! Forty-six years' experience in the electrical field is at your disposal.



At the left is shown a new Wagner 15-kva, 2400-volt, type HEB stud-bushing-type distribution transformer.

Below. Wagner single-phase, 4000-kva, 69,000 to 2400 volt transformers installed in a large industrial plant. Since dust is very prevalent at this plant and may accumulate on the bushings in sufficient quantities to cause normal-rating bushings to flash-over, these transformers are furnished with 115-kv high voltage bushings equipped with 69-kv co-ordinating gaps for use on 69-kv service.

If you desire more information about Wagner Transformers or have some specific job requiring transformers, write the nearest Wagner branch. Descriptive literature will be sent upon request.

Write for Wagner Bulletins 180 and 181 on Wagner Transformers

Wagner Electric Corporation

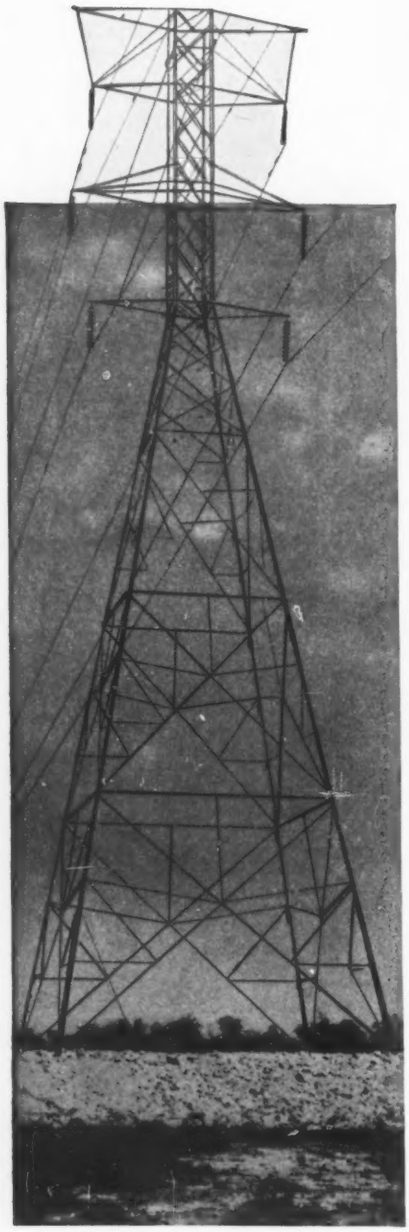
6400 Plymouth Avenue. Saint Louis. U.S.A.

TT237-2D

Wagner Transformers re Noted for Their Reliability and Economy

Switch your Power Load to

AMERICAN BRIDGE TOWERS



These illustrations show a well-designed river crossing unit (left tower, suspension type, 128 ft. high; right, strain type, 93 ft. high) carrying 6 conductors and 2 ground wires for a 154 k.v., two single circuit electric transmission line.

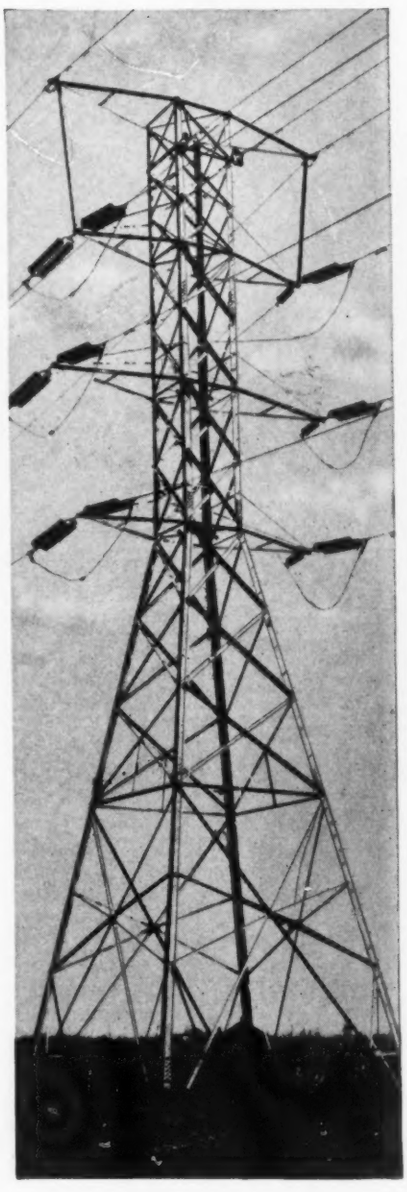
STEEL transmission towers were new, different, practically untried in 1905 when American Bridge Company engineers built their first for the line from Gainesville, Ga. to Atlanta. Thousands of experimental dollars were at stake.

But they were built with confidence! Each step had been carefully worked out, thoroughly pre-tested by these engineers. They knew, with reasonable certainty, that permanently lowered maintenance costs and improved continuity of electrical service would result.

That was 32 years ago! Today, American Bridge Engineers draw upon a remarkable background of experience. They have constructed towers for every character of terrain, weather and service. They have developed many patented features, largely responsible for a more effective, more economical construction of America's power network.

Many electrical engineers have made full size tower tests at American Bridge's proving grounds under loading technique duplicating field conditions. Most electrical engineers have watched American Bridge Towers withstand the tests of 10, 20 and even 30 years of service.

Switch your power load to American Bridge Towers. The same staff responsible for the efficient, economical construction of many of today's major transmission line projects, backed by the entire resources of American Bridge, is available to you for any tower project, under any conditions, at any place and at any time.



AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

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UNITED STATES STEEL

"SINCE MY LAST CALL ON THE ABOVE PLANT I FIND"

—*A Typical Beginning* of some 25,000 impartial reports by Socony-Vacuum Field Engineers...to guide us in refining oils suited to actual Plant conditions

How Socony-Vacuum Engineering Service can save money in your plant:

1. Curb losses that boost power consumption and costs.
2. Decrease maintenance.
3. Improve production results by greater machine efficiency.
4. Lower lubrication costs.
5. Help your men find ways to devise important economies.

TONIGHT—in hotels across the country—Socony-Vacuum Field Engineers are writing their reports!

News of what Gargoyle Lubricants did today *in service*.

News of new methods...problems.

These hard-boiled facts leave no loopholes. Gargoyle Lubricants must meet operating conditions!

Because they do—Socony-Vacuum "Correct Lubrication" has saved millions in 110 different industries. Improved production. Lowered power, maintenance and oil costs.

The advice of a Socony-Vacuum Engineer may result in surprising economies in your own plant. A word from you will bring him there.

SOCONY-VACUUM

CORRECT LUBRICATION

GARGOYLE Lubricants

SAVES MONEY FOR INDUSTRY

Read what 71 Years' Lubricating Experience...the Greatest in the Oil Business...can do for You. See Next Page.

THIS MARKETING POLICY MEANS "CORRECT LUBRICATION" FOR EVERY TYPE OF PLANT

INDUSTRY ALMOST ALWAYS FINDS that the controlled use of high-grade Gargoyle Lubricants pays for itself many times over and that they actually cost less to use than ordinary lubricants.

But, for such equipment as does not justify the highest-grade lubricants, Socony-Vacuum Engineers will always recommend a lower-priced lubricant when consistent with true economy.

Socony-Vacuum, with a complete line of products, can supply the lubricants best fitted for the requirements of the individual lubricating job as determined by specific operating conditions.

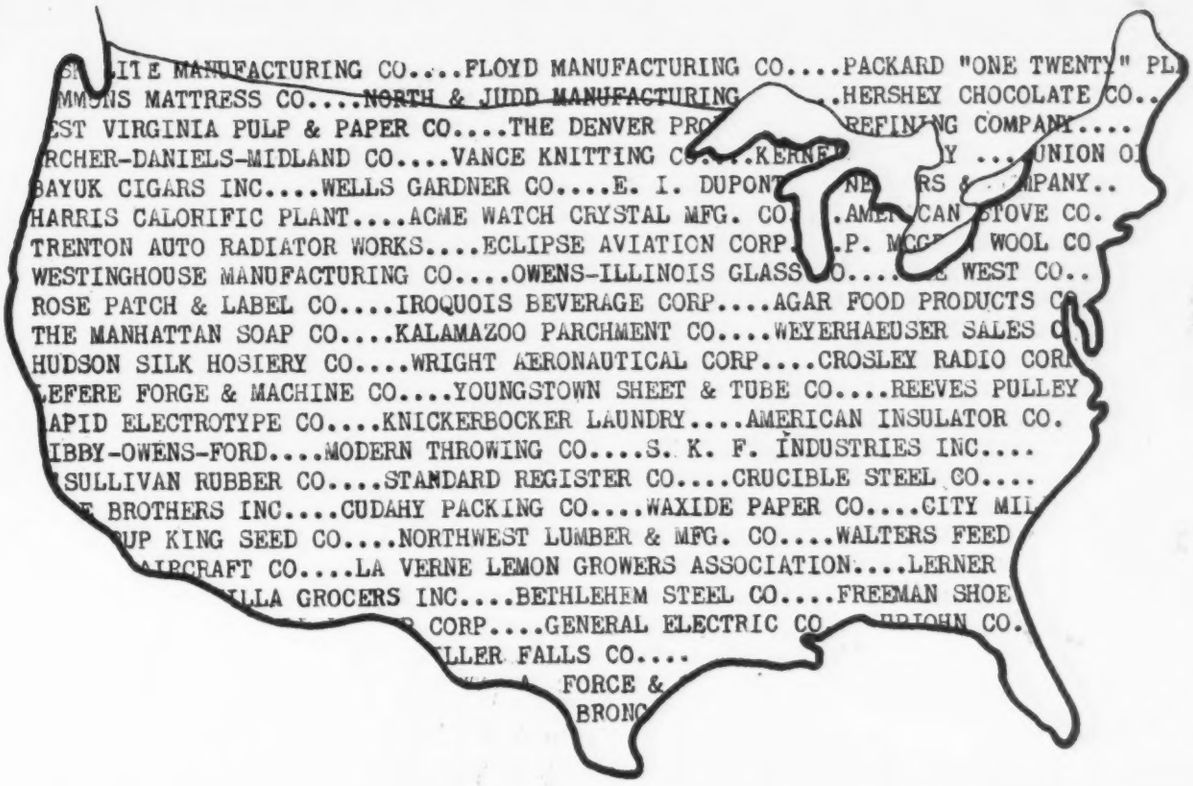
Socony-Vacuum Engineers bring you years of world-wide experience and direct cooperation with manufacturers of equipment. Lubrication Profit is the inevitable result.

SEND FOR THE SOCONY-VACUUM REPRESENTATIVE: *The services of a trained Socony-Vacuum Engineer are available at all times in helping your men to solve lubrication problems.*

SOCONY-VACUUM OIL CO.
INCORPORATED

STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION · WHITE EAGLE DIVISION
WADHAMS OIL COMPANY · MAGNOLIA PETROLEUM COMPANY · GENERAL PETROLEUM CORPORATION OF CALIFORNIA

GARGOYLE Lubricants


...ITE MANUFACTURING CO....FLOYD MANUFACTURING CO....PACKARD "ONE TWENTY" PL
MMONS MATTRESS CO....NORTH & JUDD MANUFACTURING ....HERSHEY CHOCOLATE CO..
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ROSE PATCH & LABEL CO....IROQUOIS BEVERAGE CORP....AGAR FOOD PRODUCTS C
THE MANHATTAN SOAP CO....KALAMAZOO PARCHMENT CO....WEYERHAEUSER SALES C
HUDSON SILK HOSIERY CO....WRIGHT AERONAUTICAL CORP....CROSLEY RADIO COR
EFERE FORGE & MACHINE CO....YOUNGSTOWN SHEET & TUBE CO....REEVES PULLEY
APID ELECTROTYPE CO....KNICKERBOCKER LAUNDRY....AMERICAN INSULATOR CO.
IBBY-OWENS-FORD....MODERN THROWING CO....S. K. F. INDUSTRIES INC....
SULLIVAN RUBBER CO....STANDARD REGISTER CO....CRUCIBLE STEEL CO....
BROTHERS INC....CUDAHY PACKING CO....WAXIDE PAPER CO....CITY MI
UP KING SEED CO....NORTHWEST LUMBER & MFG. CO....WALTERS FEED
IRCRAFT CO....LA VERNE LEMON GROWERS ASSOCIATION....LERNER
LLA GROCERS INC....BETHLEHEM STEEL CO....FREEMAN SHOE
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FROM ONE POWER USER TO ANOTHER

TIMELY IDEAS, gathers outstanding case studies and special plant features from industrial power users, located all over the country. Over 70 leading power companies distribute copies of TIMELY IDEAS to other power users throughout United States and Canada.

A timely idea has no geographical limitation as to where it comes comes from or where it goes—it is not limited to one type or kind of company—its uses are varied.

The readers of TIMELY IDEAS benefit by this national interchange of electrical ideas and the power companies and the electrical industry benefit by the load building action stimulated.

A current copy will better acquaint you with the job TIMELY IDEAS is doing. Why not request a sample copy on your letterhead today?

TIMELY IDEAS—330 West 42nd Street, New York, N. Y.

IMPREGNABLE!

In the Allis-Chalmers Seal-Clad Motor the wound stator receives impregnating treatment, similar to the conventional type of winding. Then a Moulded Shield of high dielectric and mechanical strength is fitted into a machined slot in the stator frame and tightly sealed into position with a special compound—thus giving complete protection to the coils.

This feature makes Allis-Chalmers Seal-Clad Motors impregnable to metallic dust, grit, oil, moisture, chemicals and other agents destructive to motor windings.

One or more of these destructive agents are present in every plant, to a greater or lesser degree . . . so why take a chance?

If your plant conditions are severe, the ultimate in motor protection is essential to you—Allis-Chalmers Seal-Clad Motors offer the ultimate in motor protection. If your plant conditions are not so severe as to make this protection absolutely essential, Allis-Chalmers Seal-Clad Motors are still the soundest investment you can make, BECAUSE YOU ARE GIVEN THIS GREAT ADDITIONAL PROTECTION AT NO ADDITIONAL COST.

For further details, write today for Leaflet No. 2182.

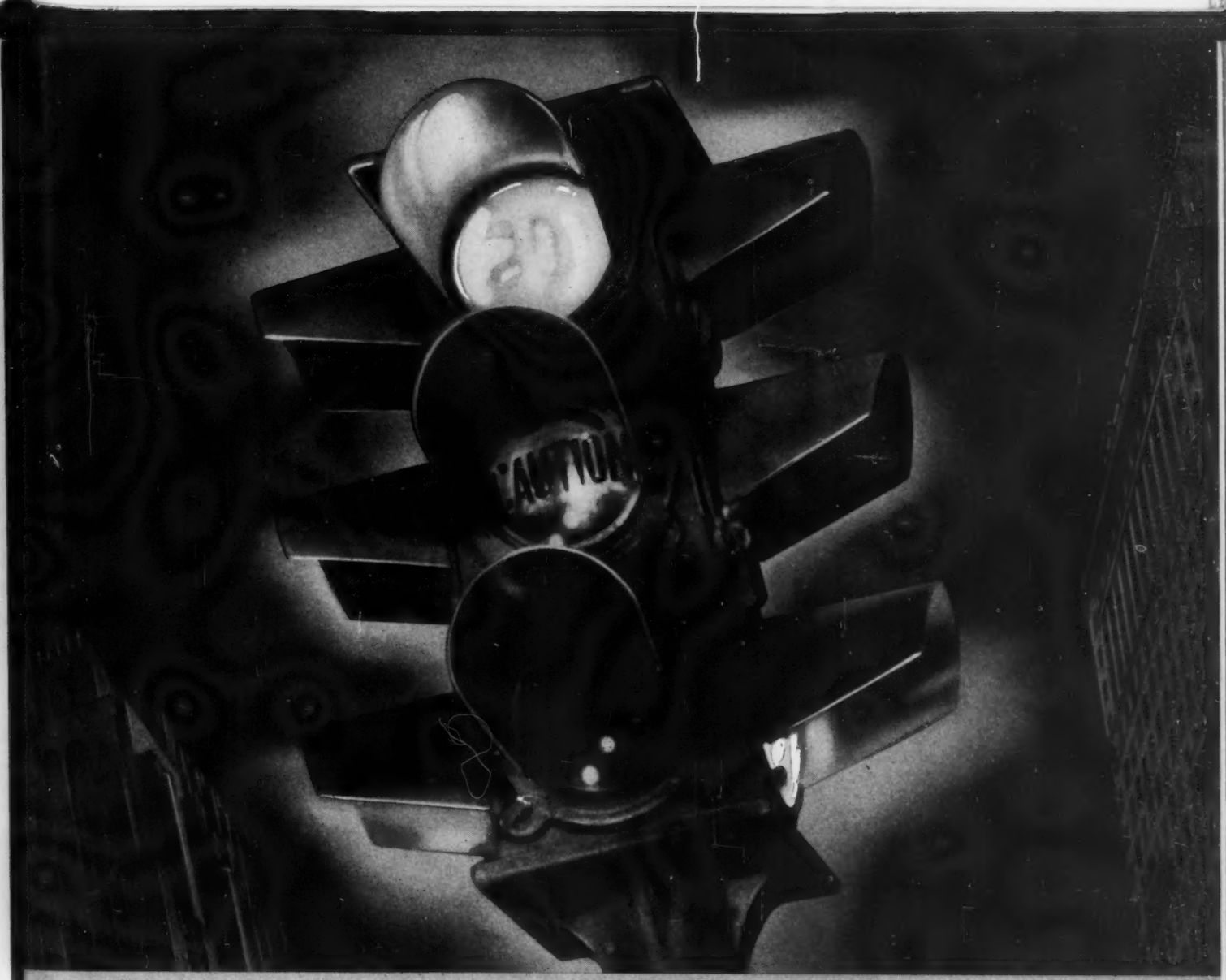
The Allis-Chalmers Mfg. Co. builds standard motors of every type from 1 hp. up—also motors for special application.

794

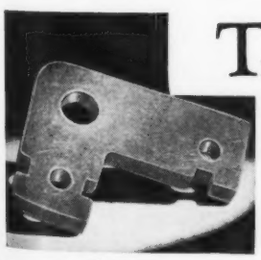
MOTOR DIVISION

ALLIS·CHALMERS

MILWAUKEE WISCONSIN



THIS EYE NEVER SLEEPS



TRAFFIC LIGHTS must be dependable because they control the safety of wave after wave of travelers at cross purposes. That is one reason why *Synthane* Bakelite-laminated is used for insulating traffic light circuits—that plus *Synthane's* combination of mechanical strength, low moisture absorption and high dielectric strength. *Synthane's* great value lies in its unusually broad *combination* of physical, electrical, chemical and mechanical properties. *Synthane* is a uniformly dense, solid material. It is tough, strong and light in weight; one of the most effective dielectric materials—combining low power factor, low moisture absorption, high dielectric strength and low dielectric constant. It is chemically inert; corrosion resistant; easy to machine. The uses for *Synthane* are countless. Just as its combined properties are necessary for insulating traffic lights, so it may be of *material* assistance in the manufacture of your product. *Synthane* is often the most economical material to use. Write for "*Synthane* for Mechanical Applications", telling us in your request your requirements.

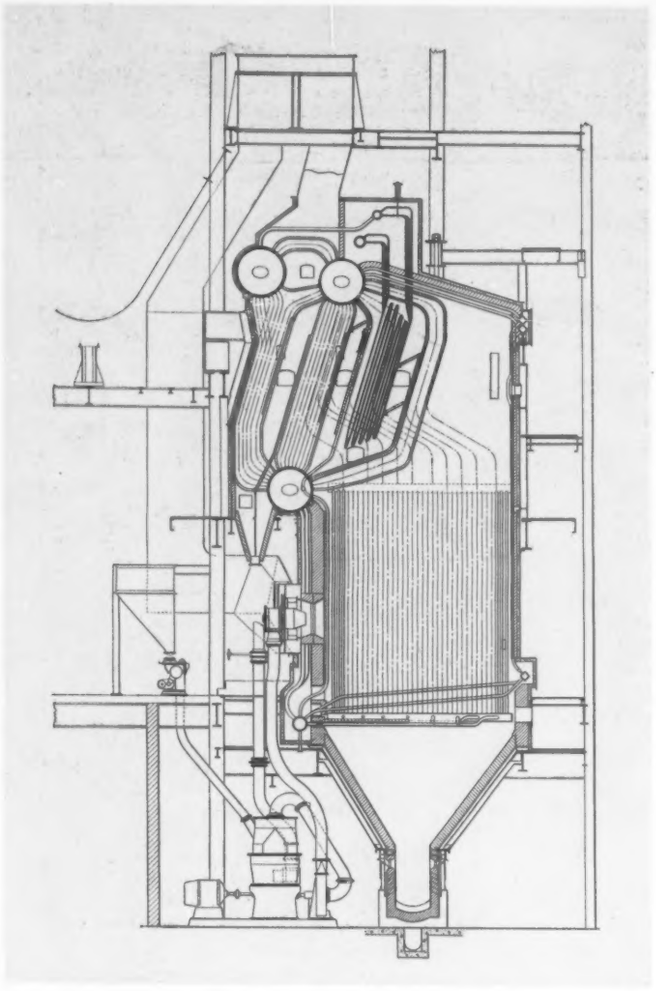
SYNTHANE CORPORATION, OAKS, PENNSYLVANIA

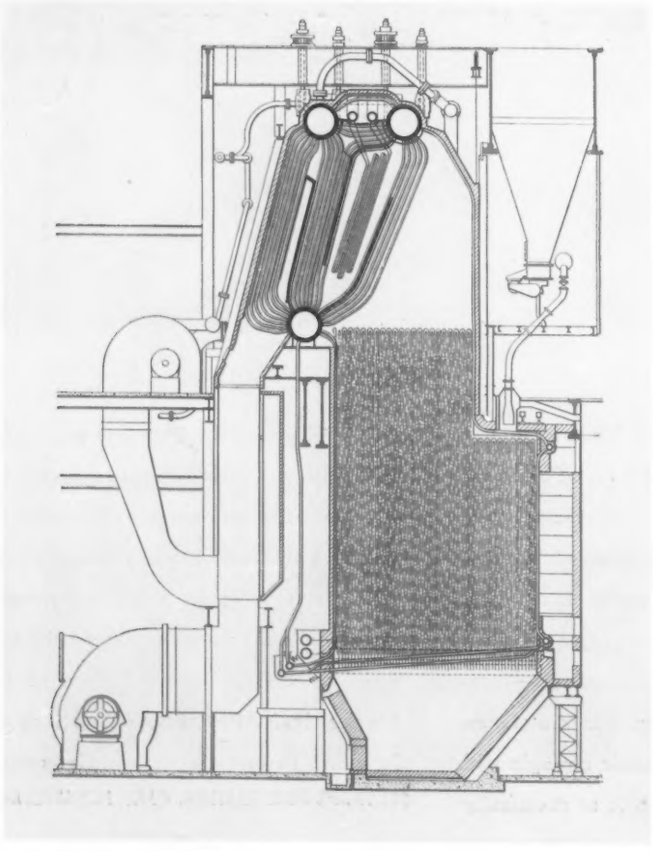
SHEETS • RODS • TUBES • FABRICATED PARTS • SILENT STABILIZED GEAR MATERIAL

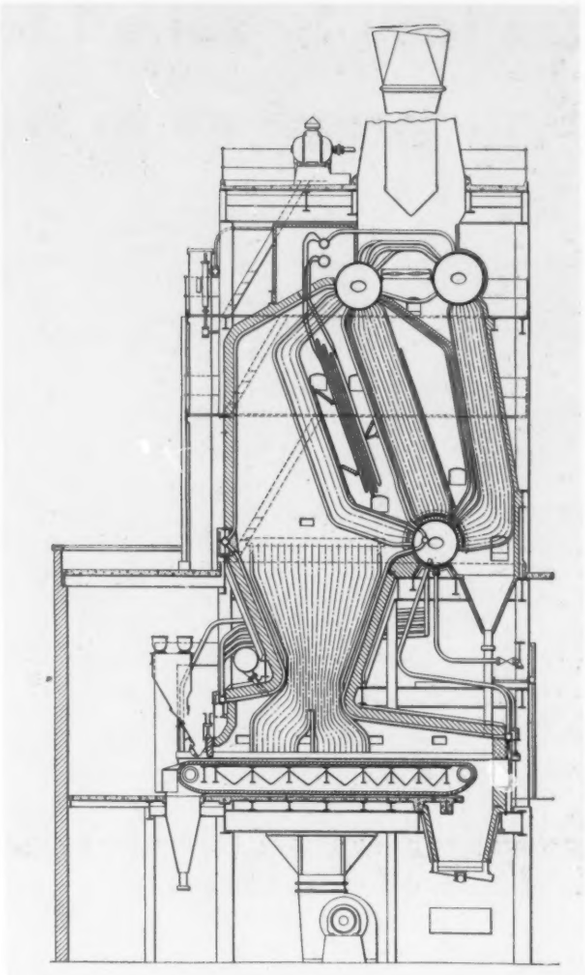
SYNTHANE

Bakelite— laminated

10 Reasons . . .







Above. C•E Unit with 3-drum boiler installed in the Provo Station of the Utah Power & Light Company. Designed to produce 200,000 lb of steam per hr at 434 lb pressure and 760F total temperature. Fired by C•E Chain Grate Stoker. This is the only boiler unit in the plant.

Upper Left. One of two C•E Units with 3-drum boilers being installed in the Montville Station of the Connecticut Light & Power Company. Designed to produce 130,000 lb of steam per hr at 650 lb pressure and 825F total temperature. Pulverized coal fired with horizontal burners.

Lower Left. C•E Unit with 3-drum boiler installed in the Port Washington Station of The Milwaukee Electric Railway & Light Company. Designed to produce 690,000 lb of steam per hr at 1320 lb pressure and 830F total temperature. Pulverized coal fired with vertical burners. This is the only boiler unit in the Port Washington Station. Three C•E Units of similar design in this company's Lakeside Station have had 96.3 per cent availability over a 4-year period. Port Washington has the lowest Btu per kw-hr record of any station in the world.

COMBUSTION

Why C·E 3-DRUM BOILERS

are ideally suited to modern high-pressure, high-temperature steam generating practice

1. Because their design provides adequately for modern superheat requirements—ample space for superheater elements, logical location of elements, and adaptability to simple damper method of controlling superheat temperature.

2. Because they have minimum susceptibility to slagging difficulties incident to the combination of high superheat requirements and coals of low-ash fusion temperature.

3. Because they are inherently free from any and all difficulties which may result from poor or restricted circulation. Their characteristic circulation is rapid and positive in every part of the boiler at all ratings.

4. Because their arrangement of heating surfaces assures that steam can be generated only from fully treated feedwater. There is no steam formation in heating surfaces other than those of the boiler and furnace.

5. Because their drum areas provide adequate steam-liberating surface, assuring rapid response to load changes and dry steam at all ratings.

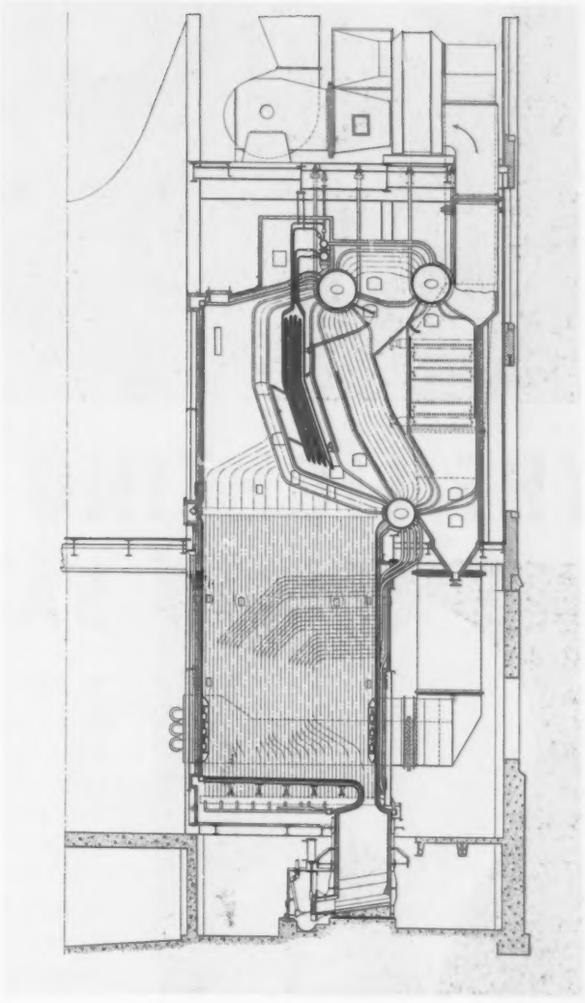
6. Because their large ratio of water storage capacity to heating surfaces affords extra protection to latter in the event of any interruption in feedwater supply.

7. Because their design flexibility permits logical adaptation of type and amounts of heating surfaces to operating conditions. Where conditions require low gas temperature leaving the boiler, small diameter tubes may be used in the last bank, providing a maximum amount of relatively low-cost heating surface. If economizer surface is required for satisfactory reduction of gas temperature, it may be installed in the space otherwise occupied by boiler tubes in the last bank.

8. Because they permit of simple arrangement of circulator tubes for connection to furnace heating surfaces.

9. Because they are adaptable to whatever furnace arrangement, fuel or method or firing is most advantageous for local space and operating conditions.

10. Because their ability to meet all these requirements of modern utility practice has been amply demonstrated by operating results over extended periods.



C·E Unit with 3-drum boiler being installed in the Riverside Station of the United Power Manufacturing Company. Designed to produce 300,000 lb of steam per hr at 880 lb pressure and 825F total temperature. Pulverized coal fired with tangential burners. Note economizer in last pass of boiler and damper for controlling gas flow over superheater.

C·E

A-347

ENGINEERING COMPANY, Inc.

200 Madison Avenue, New York, N. Y. *Canadian Associates, Combustion Engineering Corporation, Ltd., Montreal*

ALL TYPES OF BOILERS, STOKERS, PULVERIZED FUEL SYSTEMS AND HEAT RECOVERY EQUIPMENT

Every wired home in the United States will receive a total of more than 31 advertising impressions on G-E bulbs and lighting in 1938.

THE LIGHTING MARKET HAS NO SATURATION POINT!

They stay brighter longer

FOR 38 years General Electric has been advertising lamps and lighting . . . continually urging your customers to use more and more light.

During the past year alone, General Electric has made 400,000,000 advertising impressions in leading national magazines . . . plus 150,000,000 more in newspapers . . . plus 150,000,000 more in its "Hour of Charm" radio program. A total of more than 31 lamp and lighting advertising impressions per meter.

Results of this advertising are evident not only in the yearly sales increases in lamp bulbs but particularly in the significant sales increases of 100, 150, 200-watt lamps and higher. They are also evident in the sales of I. E. S. Better Sight Lamps which now produce 150,000,000 added kw-hr.

General Electric will continue this lamp and lighting advertising during 1938 . . . and in the years to come. Because the market for *lighting load is the only one that has no saturation.* General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC

Letters TO THE EDITOR

Power Production Costs

To the Editor of ELECTRICAL WORLD:

In the September issue of ELECTRICAL WORLD is an article stating "Power Not Important in Production Cost," together with a table showing percentage ratio of power costs to total production costs by different industries.

We would be pleased to know what you include in these percentages, such as electricity, steam hydraulic, compressed air, water, etc. Your reply will be appreciated.

H. W. SUDMUIR,
Auditing Department,
Firestone Tire & Rubber Co.

In reply to the question as to what is included in the percentage of total production cost, certain items such as electricity, steam, hydraulic, compressed air, water, etc., I wish to say that these tables have been accumulated over a period of the last twenty years and have been checked and rechecked on a great many occasions in different parts of the country.

In arriving at these costs, in the majority of cases the entire power costs have been used, such as heat, electricity, process steam, water, air, investment in plant and buildings, and that portion of overhead which should be charged to power, providing the same method is used in figuring the entire production cost. It does not make much difference regarding the overhead plant investment as far as the relative ratio is concerned. However, in figuring costs all power costs should be included, and have been in arriving at these tables.

If I have not made myself clear, please do not hesitate to ask for further information.

PAUL DELEON,
Commercial Manager,
Wisconsin Power & Light Co.

•

Revises Item in Steam Station Cost Study

To the Editor of ELECTRICAL WORLD:

You may recall that we have had some previous correspondence in connection with your articles on Steam Station Cost Surveys. The writer has been reading with much interest your third article on this subject in your issue of October 9, 1937.

In Table II in the above issue is there not an error in the item "Fixed Charges at 15 Per Cent" for Station "L"? Should this not be 46.7 mills instead of 4.67 mills?

GEORGE F. ROWELL,
Day & Zimmermann, Inc.

[Yes, it should be. The figure as printed seemed to be in line with those for other stations and so evaded our scrutiny. But station "L," a standby, had a relatively small output and fixed charges were thus not unnaturally ten times as large as those in stations in regular operations.—EDITORS.]

•

Water Heaters, Dishwashers From the Woman's Angle

To the Editor of ELECTRICAL WORLD:

As the wife of a utility man, I am interested in doing whatever I can to promote good will and increased revenue for our company. Often my friends complain to me of the troubles and problems they have with their electrical appliances.

One of my friends has an electric hot water heater, with which she is perfectly satisfied but for one thing. This is the element of uncertainty in not knowing just how much hot water is on hand. (Water is heated during off-peak hours.) She said her sister who was visiting her was somewhat offended at being told to conserve on the water, in case it might be low. It then occurred to me that perhaps these people were using less hot water all the time than they would if they knew just how much was available.

It seemed to me that it should be possible, and a good idea, both for the utility and the household, to install some small recording device at a convenient spot in the house where a glance would show how much hot water was on hand. The advantages seem obvious.

There is another issue I feel should be brought to the attention of the manufacturers and utility companies. From all I can gather from people I know, there is a very general belief that a dishwasher for home use is not only extremely expensive but completely inefficient. Whenever I say, in a group of women, that I should like to own an electric dishwasher, there is much laughing and scoffing at the idea. If I didn't know from demonstrations just what an electric dishwasher can do, I might be inclined to think, "Well, they can't all be wrong" and let it go at that. The reason for this general misundertanding is, I believe, due to uninformative advertising.

In the advertisements I have seen emphasis seems to be placed on a "planned kitchen," etc. The manufacturers appear to overlook the fact that there are people who could be interested in a dishwasher and who do not care to remodel the whole kitchen. People, out of timidity for fear the price may be too high or who don't want to get an overambitious salesman on their trail, will often refrain from asking for information. If these people could be told the things that they would want to know if they went to buy a piece of equipment, then they could decide for themselves whether the item was within their means, whether they really did think it desirable, etc.

For instance, what will an electrical dishwasher do? Does it remove food from plates that have been standing and where the food is hard? Does it wash glassware? Pots? Pans? Silver? Does it save water? Does it save soap? Does it save women from "dishpan hands"? Emphasize time saved and give figures. Give time required to wash dishes from when they are put in washer until they are ready to come out. Give cost for installation in a new house. Explain practicability and feasibility of installation in an already built house.

With the emphasis being placed on load building today, it seems to me that a very rich field is being missed because of poor advertising. I sincerely believe that with clever advertising the people could be made as dishwasher "conscious" as they were made refrigerator "conscious" some years ago. In order to do this, though, I think the advertising will have to emphasize what the dishwasher will do for the family.

LOUISE S. RIGGLE,
Youngstown, Ohio.

•

Revises Trussed Pole Equations

To the Editor of ELECTRICAL WORLD:

In my article entitled "Truss-Guyed Poles Reduce Deflection," on page 84 in the October 23, 1937, issue of ELECTRICAL WORLD, may I call your attention to several typographical errors that should be corrected.

In $\frac{dy}{dx}$ equation dy was upside down.

In $EI\frac{d^2y}{dx^2} - PX = 0$ the part $(= 0)$ was omitted.

In $Y_{max} = \frac{0.424\,Pl^3}{Er\,R^2}$ the decimal point was omitted.

LEONARD V. SMOOT,
Cincinnati Gas & Electric Company, Cincinnati, Ohio.

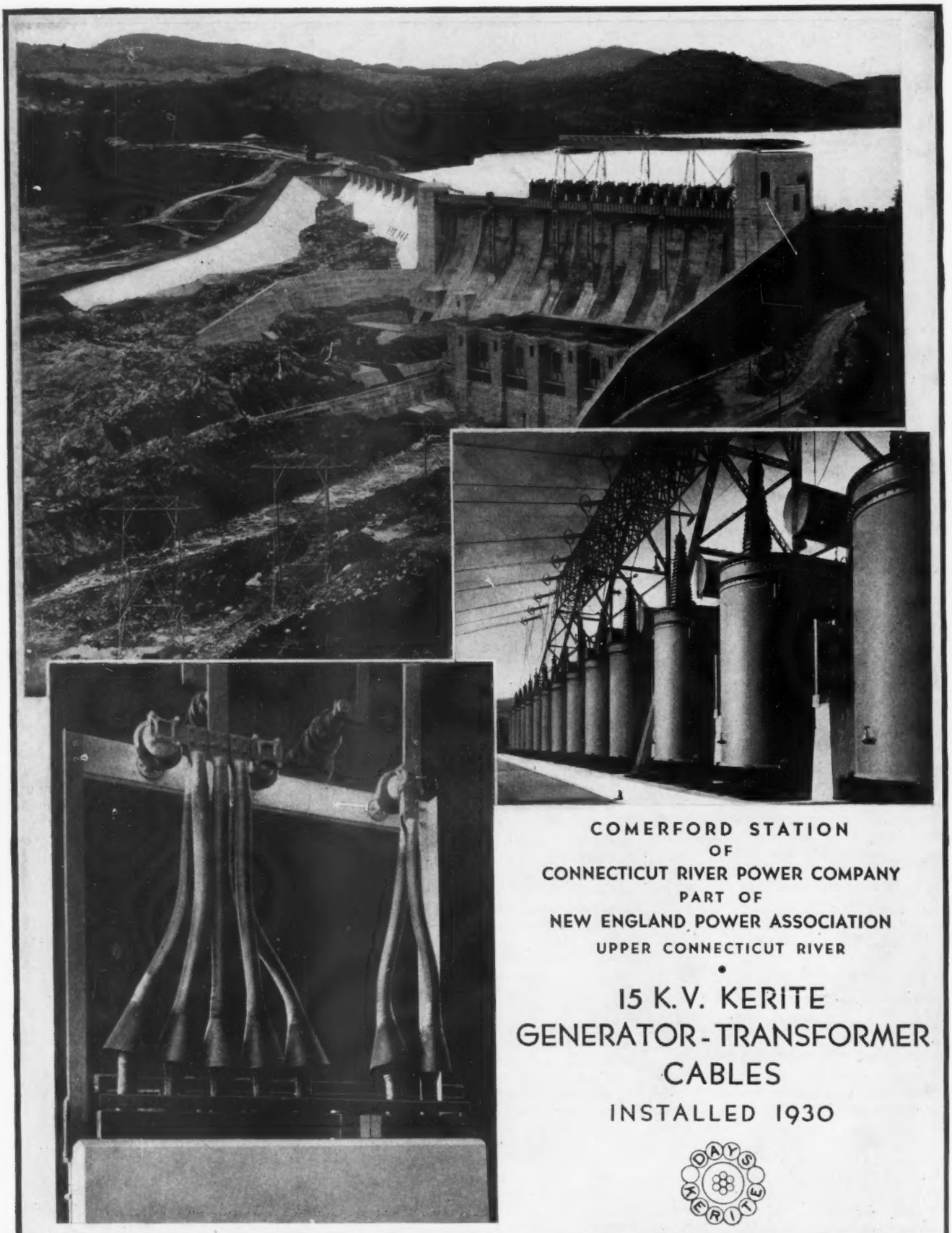
•

Error in Control Diagram Labeling

To the Editor of ELECTRICAL WORLD:

In the article "Fitting Control Equipment to Conveyor Machinery," in the November 20 issue of ELECTRICAL WORLD, page 120, I find the words stop and start on the push-button controls are interchanged.

C. E. MYERS,
Line Superintendent St. Mary's Public Utilities Commission,
St. Mary's, Ont.



COMERFORD STATION
OF
CONNECTICUT RIVER POWER COMPANY
PART OF
NEW ENGLAND POWER ASSOCIATION
UPPER CONNECTICUT RIVER

•

15 K.V. KERITE
GENERATOR-TRANSFORMER
CABLES
INSTALLED 1930

DAYS KERITE

THE KERITE INSULATED WIRE & CABLE COMPANY INC
NEW YORK CHICAGO SAN FRANCISCO

SEARCHLIGHT SECTION

EMPLOYMENT : BUSINESS : OPPORTUNITIES : EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:

10 cents a word, minimum charge $2.00.
Positions Wanted (full or part-time salaried employment only), ½ the above rates, payable in advance.

(See ¶ on Box Numbers)

Proposals, 40 cents a line an insertion.

INFORMATION

Box Numbers in care of any of our New York, Chicago, or San Francisco offices count 10 words additional in undisplayed ads.

Discount of 10% if one payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:

1 inch $7.00
2 to 3 inches..... 6.75 per inch
4 to 7 inches..... 6.50 per inch
8 to 14 inches..... 6.25 per inch

An advertising inch is measured vertically on one column, 3 columns—30 inches—to a page. *Contract rates on request.* E.W.

Copy for New Advertisements Received Until Monday 10 A.M. for the Following Saturday's Issue *(published every other week)*

POSITION VACANT

WANTED for the Panama Canal. Electrical designers. Entrance salary $270.83 month. Electrical engineering graduates from college or university of recognized standing with considerable experience in design of electrical installations in public and industrial buildings. Must be American citizens (final papers) under 45 years, in good health and physically sound. Free steamship transportation from New York or New Orleans, salary beginning sailing date. For particulars write "Chief of Office, The Panama Canal, Washington, D. C." Persons not fully meeting requirements need not apply.

EMPLOYMENT SERVICE

SALARIED POSITIONS, $2,500 to $25,000. This thoroughly organized advertising service of 28 years' recognized standing and reputation carries on preliminary negotiations for positions of the caliber indicated, through a procedure individualized to each clients personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed, present position protected. If you have actually earned over $2,500, send only name and address for details. R. W. Bixby, Inc., 262 Delward Bldg., Buffalo, N. Y. (E. W.)

POSITIONS WANTED

TECHNICAL GRADUATE—Single, age 32, 12 years' experience with public utilities, construction, operation, maintenance, office routine, drafting, emergency supervision on storm trouble. Would like change with contractor or utility in supervisory capacity on heavy duty electrical construction. Outdoor substations or power plant preferred. Now employed as construction supervisor on high tension substations. PW-682, Electrical World, 330 West 42nd Street, New York City.

ELECTRICAL ENGINEER Power Superintendent employed now and past 10 years in charge of electrical system supplying 15 cities. System includes hydro and steam plants, substations and transmission net work. Desires position middlewest or west. Married. Age 38. PW-714, Electrical World, 520 No. Michigan Ave., Chicago. Ill.

ENGINEER responsible charge electrical design, construction, operation, power stations, overhead, underground, transmission distribution. Wiring, illumination, buildings, industrial plants. Hydroelectric investigation. PW-722, Electrical World, 330 West 42nd Street, New York City.

ENGINEER, British, 39, wide experience design, manufacture, selling of transformers, regulators, and capacitators of all sizes; seeks executive position U. S. A. or Canada. Prepared to initiate the manufacture of transformers and/or capacitators for any firm. PW-723, Electrical World, 330 West 42nd Street, New York City.

UTILITY CORPORATIONS: Utility real estate and franchise taxation expert; realty appraiser; right-of-way acquisition; remarkable successful tax saving record in utility property taxation; salaried connection desired. PW-727, Electrical World, 330 West 42nd Street, New York City.

ELECTRICAL ENGINEER—14 years' experience in design and supervision of design of electrical systems for commercial, industrial, public and residential buildings, desires responsible position. Technical graduate and Registered Professional Engineer. PW-728, Electrical World, 330 West 42nd Street, New York City.

ACCOUNTANT—traveling auditor with wide successful public utility experience. Good education—31 years old. PW-730, Electrical World, 520 No. Michigan Ave., Chicago, Ill.

POSITIONS WANTED

POWER SALES ENGINEER, 25 years with utilities, 12 years as manager of power sales; industrial and power plant economy studies, heat balances, wide experience with oil engine competition. Unusually extensive and varied sales experience in large industrial areas. Have record of results. Interested in utility sales executive position, or in sales engineering. PW-729, Electrical World, 330 West 42nd Street, New York City.

WANTED

ANYTHING within reason that is wanted in the field served by Electrical World can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

SELLING OPPORTUNITIES
OFFERED—WANTED
Selling Agencies—Sales Executives
Salesmen—Additional Lines

OPPORTUNITY WANTED

ELECTRICAL ENGINEER with ten years' experience in distribution equipment desires sales connection with manufacturer having line of recognized merit. Can handle straight commission proposition. SA-726, Electrical World, 520 No. Michigan Ave., Chicago, Ill.

OFFICIAL PROPOSALS

Bids: December 22.

Electrical Equipment and Circuits

SUBSTATION "F"
P.W.A. PROJECT DOCKET NO. TENN. 1107-P-D
SUB-PROJECT—CONTRACT 12
ITEM "A"—OUTDOOR SWITCHING STATION.
ITEM "B"—4 KV. INDOOR SWITCHGEAR AND FEEDER REGULATORS.
ITEM "C"—BENCH TYPE CONTROL BOARD.
ITEM "D"—CABLES, CIRCUITS AND MISCELLANEOUS EQUIPMENT.
MEMPHIS LIGHT AND WATER DIVISION
CITY OF MEMPHIS
MEMPHIS, TENNESSEE

Sealed proposals for the furnishing and installing of Electric Equipment and Circuits for Items "A", "B", "C", or "D" or any combination thereof for Substation "F", for the Memphis Light and Water Division, City of Memphis, Memphis, Tennessee,

P.W.A. Project Docket No. Tenn. 1107-P-D
SUB-PROJECT—CONTRACT 12
Item "A"—Outdoor Switching Station
Item "B"—4 Kv. Indoor Switchgear and Feeder Regulators
Item "C"—Bench Type Control Board
Item "D"—Cables, Circuits and Miscellaneous Equipment

will be received by the Board of Light and Water Commissioners, Memphis Light and Water Division, City of Memphis, Memphis, Tennessee, at the office of the Secretary of the Memphis Light and Water Division, Goodwyn Institute Building, Memphis, Tennessee, until 2:00 P. M. on the 22nd day of December, 1937, and will be immediately publicly opened and read by the Board of Light and Water Commissioners.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of the Memphis Light and Water Division, Goodwyn Institute Building, Memphis, Tennessee. A charge or deposit of one hundred and fifty ($150.00) dollars will be required of eligible bidders for procuring specifications, drawings and contract documents. The deposit for plans and specifications will be returned to all, except the successful bidder, on the return of plans, contract documents, and specifications in good condition within ten (10) days after bids are opened.

A copy of the plans and specifications may be examined free of charge at the office of the Memphis Light and Water Division.

Each bid must be accompanied by a certified check or bidder's bond, executed by the bidder and a surety company licensed to do business in Tennessee, in the sum of ten (10%) per cent of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be immediately entered into and the performance of it properly secured. The successful bidder will be required to execute a performance bond acceptable to the Board of Light and Water Commissioners in the amount of one hundred (100%) per cent of the contract price, and said performance bond, among other things, shall provide that the Contractor will pay for all labor and materials used by said Contractor, or any immediate or remote subcontractor under him, in said contract, etc.

Proposal form must be properly filled out and must not be detached from the specifications. No qualifying letters or statements will be considered.

All bidders must be licensed contractors as required by Chapter 70 of the Public Acts of 1931 of the General Assembly of the State of Tennessee, Section 1. Bidders's name and license number must be placed on the envelope containing these documents.

Bidders shall also designate on the envelope containing the bid the project bid upon.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the contract must be paid on this project.

WITHDRAWAL OF BIDS: No bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

The estimated cost of construction of this project is $295,000.00.

The Board of Light and Water Commissioners reserves the right to reject any or all bids on any or all items, and to waive informalities therein.

Any bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

MEMPHIS LIGHT AND WATER DIVISION,
City of Memphis, Memphis, Tennessee
By THOS. H. ALLEN,
Chairman
W. W. MALLORY,
Vice-Chairman
I. J. LICHTERMAN,
Commissioner
Board of Light and Water Commissioners
Attest:
N. W. WADE,
Secretary

(Additional Proposal Advertisement continued on the next page)

OFFICIAL PROPOSALS

Continued from preceding page

Bids: December 22.

Electrical Equipment and Circuits

SUBSTATION "C"
P.W.A. PROJECT DOCKET NO. TENN. 1107-P-D
SUB-PROJECT—CONTRACT 11
ITEM "A"—OUTDOOR SWITCHING STATION.
ITEM "B"—4 KV. INDOOR SWITCHGEAR AND FEEDER REGULATORS.
ITEM "C"—BENCH TYPE CONTROL BOARD.
ITEM "D"—CABLES, CIRCUITS AND MISCELLANEOUS EQUIPMENT
MEMPHIS LIGHT AND WATER DIVISION
CITY OF MEMPHIS
MEMPHIS, TENNESSEE

Sealed proposals for the furnishing and installing of Electrical Equipment and Circuits for Items "A", "B", "C", or "D" or any combination thereof for Substation "C", for the Memphis Light and Water Division, City of Memphis, Memphis, Tennessee,

P.W.A. Project Docket No. Tenn. 1107-P-D
SUB-PROJECT—CONTRACT 11

Item "A"—Outdoor Switching Station
Item "B"—4 Kv. Indoor Switchgear and Feeder Regulators
Item "C"—Bench Type Control Board
Item "D"—Cables, Circuits and Miscellaneous Equipment

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A copy of the plans and specifications may be examined free of charge at the office of the Memphis Light and Water Division.

Each bid must be accompanied by a certified check or bidder's bond, executed by the bidder and a surety company licensed to do business in Tennessee, in the sum of ten (10%) per cent of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be immediately entered into and the performance of it properly secured. The successful bidder will be required to execute a performance bond acceptable to the Board of Light and Water Commissioners in the amount of one hundred (100%) per cent of the contract price, and said performance bond, among other things, shall provide that the Contractor will pay for all labor and materials used by said Contractor, or any immediate or remote subcontractor under him, in said contract, etc.

Proposal form must be properly filled out and must not be detached from the specifications. No qualifying letters or statements will be considered.

All bidders must be licensed contractors as required by Chapter 70 of the Public Acts of 1931 of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

Bidders shall also designate on the envelope containing the bid the project bid upon.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the contract must be paid on this project.

STEPHEN HALL & COMPANY, INC.
7th and Adams St., Hoboken, N. J.

SQUIRREL CAGE MOTORS

Hp	Volts	Make	Type	Speed
200	550	Whse.	CS	720
200	550-440-220	G.E.	IK	600
150	2300-440-220	Whse.	CS	600
150	2200	G.E.	IK	720
150	440-220	G.E.	KT	900
150	220-440	G.E.	IK	720
100	2200-550	G.E.	IK	1800
100	2200-550	G.E.	KT	900
75	220-440	G.E.	KT	900
60	220-440	G.E.	KT	900
50	220-440	G.E.	KT	900
50	2200	G.E.	IK	514
40	2200	Whse.	CS	1200
40	550	G.E.	KT	720
40	220-440	Whse.	CS	900
40	220-440	G.E.	KT	900
40	220-440	G.E.	KT	1200

SLIP RING MOTORS
3-PH., 60-CY.

Hp	Volts	Make	Speed
300	2200-440-220	G.E.	1200
250	220-400	G.E.	450
200	2200-440-220	G.E.	600
150	2200-550-440-220	G.E.	720
150	2200-440	Whse.	1800
100	2200-440-220	Whse.	1200
100	2200-550-440-220	G.E.	720
100	440-220	G.E.	900
75	440-220	G.E.	1200
60	2200-550	G.E.	900
60	440-220	G.E.	1200
50	2200-440-220	G.E.	1200
50	2200-440	G.E.	720
50	440-220	G.E.	600
50	220-440	G.E.	900
40	2200-440-220	G.E.	1200

SYNCHRONOUS MOTORS
3-PH., 60-CY.

Hp	Volts	Make	Speed
400	2300	El. Mchy.	1800
350	220-440	G.E.	200
240	2300-550	G.E.	900
240	2200-220-440	G.E.	600
200	220-440	G.E.	720
160	2200-550	G.E.	900
160	4150	El. Mchy.	300
125	2200-440	G.E.	300
120	2200-440-220	G.E.	1200
120	440-220	G.E.	900
65	2200-440-220	G.E.	600
60	4150	Ideal	327
60	2200-440-220	G.E.	1200
40	2200-440-220	G.E.	1200
25	220-440	G.E.	1200

TRANSFORMERS—60 CYCLE

3—1667 kva., G.E., type H-D 66000-22000/11000.
3—1500 kva., G.E., type H-D 23000-2300/4000 Y.
3—333 kva., Whse., 26,400/13,200-230/460.
4—200 kva., Pittsburgh, type OISC, 13200-460.
3—150 kva., G.E., type H-KS, 2300-115/230/460.
3—150 kva., G.E., type H-KD, 4000-230/460.
3—100 kva., Whse., 13200 115/230 V.
3—100 kva., G.E., type H-KR, 13200-2300.
3—100 kva., Pittsburgh, 2400-240.
3— 75 kva., G.E., Type H-KS, 2300-115/230.
3— 50 kva., G.E., type H-K, 2400-240/480.
3— 50 kva., Pittsburgh 13800-120/240.
9— 25 kva., G.E., type H-KR 11500-240/480.

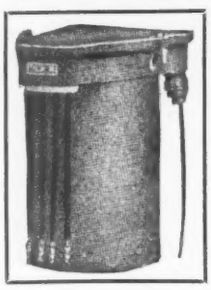
A. C. GENERATORS

1—312 kva., 900 r.p.m., 2200-550-V., Whse.
1—225 kva., 600 r.p.m., 2200-240-480-V., G.E.
1—225 kva., 900 r.p.m., 2300-550 V., G.E.
1—187 kva., 900 r.p.m., 2200-550-V., Whse.
1—150 kva., 900 r.p.m., 2200-550-V., G.E.
1—112½ kva., 1200 r.p.m., 2200-480-240-V., G.E.
1—112½ kva., 900 r.p.m., 480-240-V., G.E.
1—62.5 kva., 600 r.p.m., 2200-480-240-V., G.E.
1—60 kva., 1200 r.p.m., 240-480-V., Fairbanks-Morse.
1—56.3 kva., 1200 r.p.m., 2200-240-480-V., G.E.
1—37.5 kva., 1200 r.p.m., 2200-240-480-V., G.E.
1—15 kva., 1200 r.p.m., 240-480-V., G.E.

MOTOR GENERATOR SETS

1—200 kw., 250-V., 1200 r.p.m., Elec. Machry., connected to 233 kva., 2300/4000-V., 60-cy., synchronous motor.
1—75 kw., 125-V., 1200 r.p.m., G.E., type BC, connected to type ATI, 115 hp., 220/440/550-V., 60 cy. syn. motor.

-TRANSFORMERS-



A Complete Stock Prompt Shipment

6—25 KVA W-H, 33000-2300 Volts **$265.00 Ea**

6—55 KVA G-E, 33000-445 Volts 1 phase, 60 cycle **$400.00 Ea**

We Rewind, Repair and Redesign all Makes and Sizes.

ALL TRANSFORMERS GUARANTEED FOR ONE YEAR
Write for Catalog No. 132-A

THE ELECTRIC SERVICE CO., INC.
"AMERICA'S USED TRANSFORMER CLEARING HOUSE"
STATION M SINCE 1912 CINCINNATI, OHIO
WANTED: Transformers, burned-out or in operating condition.

OFFICIAL PROPOSALS

WITHDRAWAL OF BIDS: No bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

The estimated cost of construction of this project is $315,000.00.

The Board of Light and Water Commissioners reserves the right to reject any or all bids on any or all items, and to waive informalities therein.

Any bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

MEMPHIS LIGHT AND WATER DIVISION,
City of Memphis, Memphis, Tennessee
By THOS. H. ALLEN,
Chairman
W. W. MALLORY,
Vice-Chairman
I. J. LICHTERMAN,
Commissioner
Board of Light and Water Commissioners
Attest:
N. W. WADE,
Secretary

"SEARCHLIGHT"
IS
Opportunity Advertising

—to help you get what you want.

—to help you sell what you no longer need.

Take Advantage Of It
For Every Business Want
"Think SEARCHLIGHT First"

G-7

J. L. HEMPHILL & CO. Inc.
ELECTRICAL ENGINEERS AND EQUIPMENT
807 Williams St. North Bergen, N. J.

N.Y.C. Tel.: LOngacre 5-3227—N. J. Tel.: PAlisade 6-2600

HOWARD B. JOHNSON, 53 W. Jackson Blvd., Chicago, Ill., Chicago Representative

MOTOR GENERATOR SETS

1—200-kw., 600 volt, Westinghouse, Synchronous.
1—200-kw., 125-V., G.E., Synchronous.
2—150-kw., 125-V., G.E., Synchronous.
1—150-kw., 250-V., Westinghouse, Synchronous.
1—100-kw., 125-V., G.E., Synchronous.
2—100-kw., 125-V., G.E., Sq. Cage.
1—100-kw., 125-V., G.E., Synchronous.
1—100-kw., 250-V., Westinghouse, Synchronous.
1— 75-kw., 125-V., Crocker-Wheeler, Synchronous.
1— 75-kw., 250-V., G.E., Synchronous.
1— 50-kw., 125-V., G.E., Sq. Cage.
1— 50-kw., 250-V., G.E., Sq. Cage.

TURBINES

1—500-kw., General Electric, 3 phase, 60 cycle, 480 volt bleeder.
1—500-kw., G.E., 3600 R.P.M., direct connected exciter, generator only.
1—400-kva., General Electric, non-condensing.
1—156-kva., Westinghouse, non-condensing.
2—100-kw., Westinghouse, 3 phase, 60 cycle, 220 volt, non-condensing.
1—62½-kva., Allis Chalmers-Kerr, 220 volt, 3 phase, 60 cycle, non-condensing.
1—50-kw., 125-V., G.E.-Kerr.

TRANSFORMERS

3—500-kva., Maloney, 4600/2300-230/460.
4—300-kva., Pittsburgh, 4600/115/230 volts.
3—300-kva., 3-ph., Pittsburgh 4800/2400/240/120-v.
3—250-kva., General Electric, 2300/460 volt.
4—200-kva., Pittsburgh, 7800/220/110 volts.
2—150-kva., Westinghouse, 2300/230/115-V.
1—37½-kva., G.E., 240/120-V.
5—25-kva., Westinghouse Air Cooled, 440/220/220/110-V.
1—31½-kva., G.E., 440/110-V.
1—25-kva., G.E., 440/110-V.
1—25-kva., American, 220/220/110-V.
1—25-kva., G.E., 220/220/110-V.
4—21-kva., G.E., 440/110-V.
2—20-kva., Westinghouse, 440/220/110-V.
3—15-kva., G.E., 440/120-V.
4—15-kva., Westinghouse Air Cooled, 220/440/220/110-V.
1—10-kva., G.E., 440/220/110-V.

MOTORS—3 PHASE, 60 CYCLES

No.	H.P.	R.P.M.	Volts	Type
1	720-kva.	514	4000/2300	G.E. Syn.
1	600-kva.	900	2300	G.E. Syn.
1	500	450	2200/4000	G.E. Sl. Rg.
1	350	100	220	G.E. Syn.
1	250	600	440	Wghse. Syn.
1	240	720	2200	G.E. Syn.
2	200	514	220/440/4000	G.E. Syn.
4	200	450	2200/4000	G.E. Sl. Rg.
2	200		2200/4000	G.E. Sl. Rg.

Variable Speed 230 Volt Motors

H.P.	R.P.M.	Type
200	275/550	G.E.
125	475/950	Westinghouse
90	470/940	G.E.
75	235/950	Burke
35	500/1500	G.E.
35	500/1250	G.E.
30	600/1200	West.
20	750/1500	G.E.
20	375/1500	West.
20	400/1200	G.E.
4—20	300/1200	G.E.
3—15	300/1200	G.E.

Complete Line of A.C. and D.C. Motors and Generators

OPPORTUNITIES!

in

New and used equipment recently released from service by a number of electric and gas utility companies.

·℧·

POWER PLANT EQUIPMENT
CONSTRUCTION EQUIPMENT
SUBSTATION EQUIPMENT
TRANSMISSION LINE MATERIALS

·℧·

Send for new list, . . . to

APPARATUS EXCHANGE
EBASCO SERVICES INCORPORATED
Two Rector St. New York, N. Y.

INDUCTION FEEDER REGULATORS

30—G.E. I.R.S. 24-36 and 48 KVA 2300 Volts.

TRANSFORMERS

6—333 KVA Pitts 26,000/13200/2400 V.
9—110 KVA G.E. 13200/6900/430/288/144 V.
6—100 KVA G.E. 13800/230/460/115/230 V.

CIRCUIT BREAKERS (AIR & OIL)

60—100 to 3000 Amps 2500 to 26000 V. Types. B13—H 102 & 203 FK—CF—D12—B2—FK5—13—35Y.

LIGHTNING ARRESTERS

34—Westinghouse Type SV & LV—15000 to 37000 V. Indoor & Outdoor 2 and 3 pole.

SUBSTATION EQUIPMENT

HALLENBECK & CO. INC.
52 Church St. New York City

LIQUIDATION SALE OF

BLAIRSVILLE GLASS CO.

Blairsville, Pa.

4—700 HP. 4000/2200/440 V. 393 rev. 3 ph. 60 cy. G.E. Slipring Motors.
4—500 HP. 4000/2200/440 V. 435 rpm. 3 ph. 60 cy. G.E. Slipring Motors.
1—300 KW. 250 V. DC 2200 V. 3 ph. 60 cy. 900 rpm. G.E. syn. motor gen. set. 35% P.F.
1—810 cu. ft. 2 stage Burry Compressor 100 lbs. with syn. motor.

Large Lot AC & DC Motors up to 200 HP.

Full Specifications and Prices on Request
Complete Plants Bought and Sold

DUQUESNE ELECTRIC & MFG. COMPANY
Pittsburgh, Pa.

FOR SALE

ONE M.G. SET

300 h.p. Elec. Mach., Syn. Motor, 100% P.F., 40 deg., 2300-3-60, 1200 RPM, coupled to G.E. 150 k.w., type mpc, Form L, 250 volts D.C., generator on cast iron base. Can be seen in operation. Fine condition—without starting or generator panels.

FS-724, Electrical World
330 W. 42nd St., New York City.

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WANTED TO PURCHASE

MOTOR

1000 to 1200 H.P., 2300 V., 3 Phase, 60 cycle electric motor; either slip-ring or synchronous, synchronous preferred. Quotations should state power factor, pull-in and pull-out torque, age, condition and other pertinent information.

SWEET'S STEEL COMPANY
Williamsport, Pa.

A. C. Motors
3 PH. 60 CY.

SLIP RING

HP	Make	Volts	Speed
1500	West.	2200	440
850	West.	2200	710
500	Al.Ch.	4000/2300	500
450	West.	2200	875/700
400	Al. Ch.	2300	505
400	West.	440	450
400	G.E.	2300/4150	390
300	Al.Ch.	2200	585
250	G.E.	2200	900
250	G.E.	4000/2300	257
250	F.Morse	2200	1200
250	West.	2200	500
250	West.	440/220	585
250	Cr.Wh.	440/220	435
225	G.E.	440/220	1800
200	West.	550/220	505
200	West.	440/220	580
150	G.E.	440/220	870
100	G.E.	550/220	700

SYNCHRONOUS

1500	G.E.	440/220	180
1400	G.E.	4000/2300	514
1000	West.	2400	900
450	West.	440/220	257
375	G.E.	2300	600
350	Cr.Wh.	2300/440	720
300	G.E.	440/220	600
225	El.Mch.	2300/4150	450
200	West.	2200/550	1800

SQUIRREL CAGE

250	West.	2300/440	580
250	Al.Ch.	440/220	1200
200	G.E.	440/220	1760
150	Al.Ch.	440/220	1200
125	G.E.	550	600
100	G.E.	440/220	720

Motor Generator Sets
3 PH., 60 CY. & 25 CY.

2000 KW Al.Ch. DC 275V interpole to Sy 12000/6600V 300 RPM 25 cy
2-1250/1500 KW West 3un 2-625/750 KW DC 125V on ea end of 1-1930 KVA Sy 2200V 600 RPM with exciter. 60 cy
1000 KW GE MPC DC 600V to 1400 HP Sy ATI 4000V 514 RPM. 60 cy
1000 KW GE MPC DC 250V to 1400 HP SY 6600/2300V 514 RPM. 60 cy
500 KW GE MPC DC 250V Comp. interpole to 700 HP Sy ATI 2300V 720 RPM. 60 cy
3-300 KW GE MPC DC 600V to Sy ATI 2300V 720 RPM. 60 cy
2-250 KW GE DC 250V to Sy ATI 2300V 720 RPM. 60 cy
250 KW GE 3un 250/125V Sy 2-125 KW interpole DC Gen 125V on ea end of 1-390 HP Sy 6600V 750 RPM. 25 cy
200 KW Ridgeway DC 275V to 300 HP Sy 440/220V 900 RPM. 60 cy
140 KW Cr.Wh.125/250V 3un 2-70 KW CCD Comp. interpole DC 125V on ea end of 200HP Sq Cage 2300V 690 RPM. 60 cy
100 KW Ridgeway DC 275V to 150 HP Sy 2300V 1200RPM. 60 cy

Transformers—60 Cy.

	Ph.
2-4000 G.E.WCT.79600x2300	3
3-333 Mal'y.13200x6600/2200	1
3-300 G.E.H 2400x120/240	1
3-200 West.SK 2300x460/230-115	1
3-100 Pittsburgh 2300x115/230	1
2-75 Mal'y HE 2200x110/220	1

D. C. Motors
ADJ. SPEED—230 V

HP	Make	Type	Speed
875	West		480/720
550	West		240/720
500	G.E.	MPC	180/350
400	G.E.	MPC	160/300
400	West.	QS	450/675
300	West.	SK	150/300
200	G.E.	DMC	300/600
125	West.	SK-210	225/900
125	G.E.	DMC	150/300
120	G.E.	DMC	300/750
100	West.	SK	475/1000
100	Reliance	1050T	400/1200
80	Diehl	K11-40	550/1100
75	Cr.Wh.	100H	300/900
60	El.Dy.	25-S	525/1050
50	West.	SK-1s0	225/600
40	Cr.Wh.	H	175/700
35	West.	SK	500/1500
30	Rel.	T-262T	500/1500
25	West.	SK-130	375/1200
20	G.E.	LC	650/1950

CONSTANT SPEED

400	West.	QS	450
400	G.E.	MPC	500
200	G.E.	DMC	475
200	West.El.	MPC	1750
100	G.E.	C.D.	850
100	G.E.	R.C.	600
100	Cr.Wh.	100H	600
100	G.E.	C.D.	850
100	G.E.	R.C.	950
75	G.E.	C.D.	575

A. C. Gen. 3 Ph-60 Cy.

KVA	Make	Volts	Speed
1250	G.E.	440/220	180
1000	West.	2300	900
937	Al.Ch.	2300	450
750	West.	480	3600
375	West.	2300	240
300	G.E.	480/240	600

RE-NU-BILT BELYEA MOTORS

ABOVE IS ONLY A PARTIAL LISTING
WE ALSO SPECIALIZE IN GENERATORS, GEAR REDUCERS
ROTARY CONVERTERS, GAS ENGINE GENERATOR SETS & PUMPS

BELYEA CO., Inc.

151 West 18th St.
New York, N. Y.

NOTICE TO ADVERTISERS

Because of the Holiday, Christmas Day, December 25th, the "Searchlight" pages of the

JANUARY 1st ISSUE OF

ELECTRICAL WORLD

close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

FINAL CLOSING TIME
Display and Undisplayed Ads:
Friday 10 A. M., December 24th

Proposals: Friday 10 A. M. December 24th

ADVERTISING IN THIS ISSUE

● *Here is displayed more goods and services used in the electrical industry than in any other place. Here you'll find the answers to many of your questions about: What's new in the market? What products or methods will save me time and money? It's a good habit to follow the pages in Electrical World each issue. You never know when some new idea will pay you a profit.*

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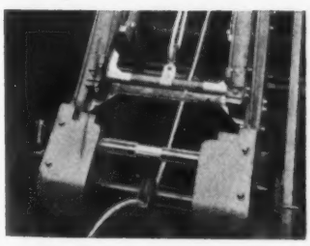
*** These companies have supplied additional buying information on their products in the 1938 edition of the Electrical Buyers' Reference, published by Electrical World**

MANY 1938 BUDGETS CALL FOR MURRAY CROWSNESTS

MAINTENANCE WILL BE SAFE, ECONOMICAL AND EFFICIENT—MAKE YOUR APPROPRIATION NOW



A ladder-rig of unique design and built of the sturdiest materials throughout . . . engineered for super-safety.

The CROWSNEST is an outstanding value. It costs little to buy and because of its extreme flexibility, speedy operation and safety, provides for low cost street light maintenance, line inspection, tree trimming and emergency work.

Ask for Bulletin 102 — 20 pages of detailed description — numerous in-service pictures.

METROPOLITAN DEVICE CORP., BROOKLYN, N. Y.

MURRAY CROWSNEST

To help you plan

Questions like these have an important bearing on your business in 1938—

- What additions are being made to Power Plant Capacity? What companies are making them? . . . Where are they being built?
- What was the total Generating Capacity for 1937?
- How much did the Kilowatt-hour Output increase?
- Is new Construction keeping ahead of Demand?
- How much did Industrial Power consumption rise in 1937?
- How much did Energy Consumption increase in other Classes?
- What increases did these Sales bring in Revenues?
- How much did average Rates Decrease? (Industrial, Residential & Commercial)
- How many New Customers in each state? (by classes)
- What are the prospects for New Substation Capacity?
- How fast is Rural Service being extended?
- What part of Earnings go into Operating Expenses?
- What part of Earnings go into Wages? . . . Taxes?
- How much New Capital was Invested? . . . How much for Refunding?
- How much Money will the Utility Industry spend for New Construction in 1938?

You will find the answers in facts that will help YOU

ENGINEERED FOR *Your* JOB

When Allis-Chalmers builds a power transformer you can be certain of one fact, that transformer is built to fit your particular job. Whether for just a two-winding, a three-winding or even four or more windings, or for in-phase voltage control or phase angle control under load, you will find that Allis-Chalmers engineers will cooperate with you in building the type of transformer that will best suit your specific need. From the first design sketch to the finished transformer it is exclusively yours, incorporating in it all features required to solve your particular problem in a sound engineering manner.

That is one reason why Allis-Chalmers Transformers are so highly considered throughout industry, one reason why Allis-Chalmers Transformers are setting new records for service and economy of operation.

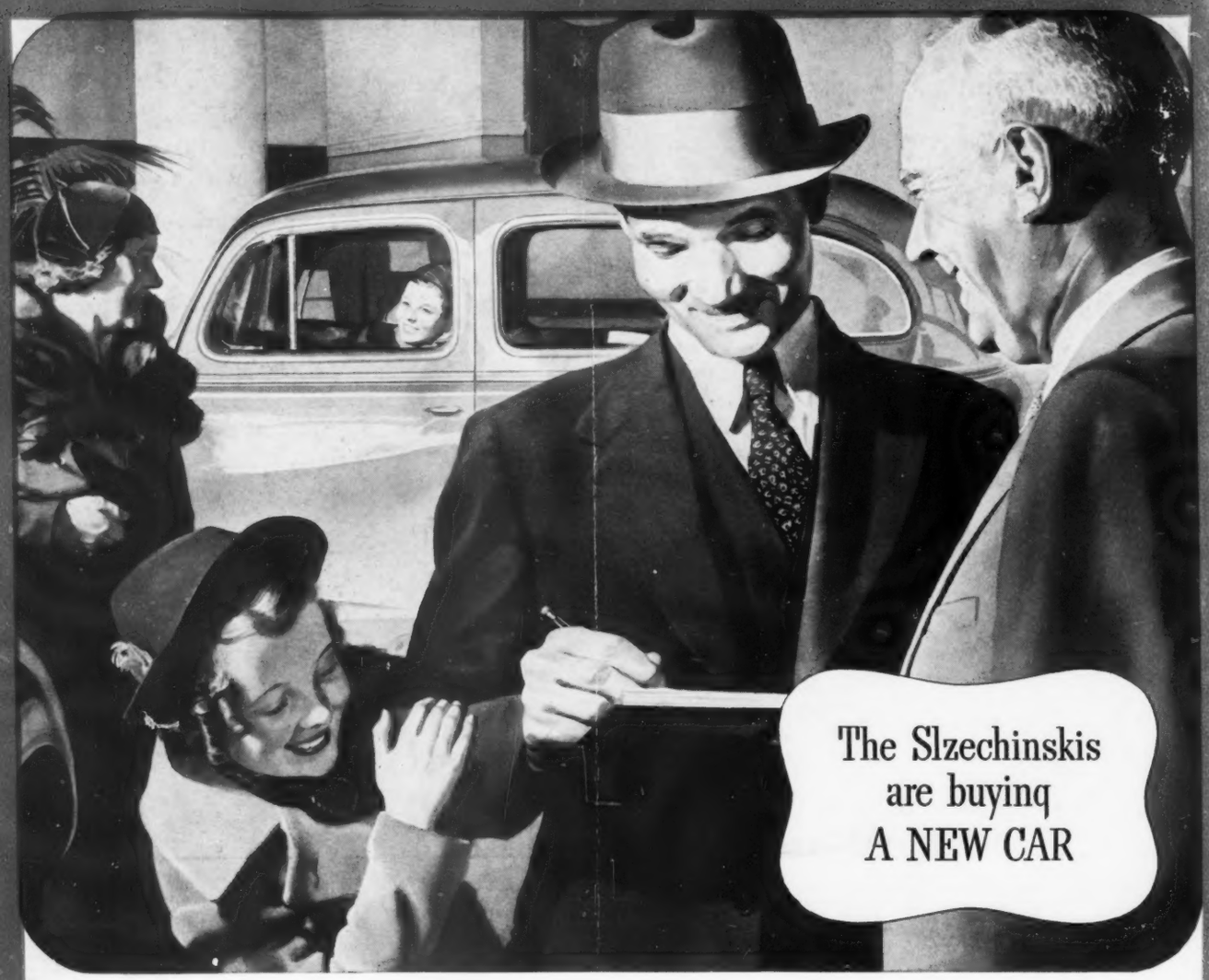
796

TRANSFORMER DIVISION

ALLIS·CHALMERS

MILWAUKEE WISCONSIN

AN ADVERTISEMENT OF THE WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY • EAST PITTSBURGH, PENNSYLVANIA



America builds more and buys more — thanks to electrically-driven machines

WHEN Mike Slzechinski's relatives in the "old country" hear he has bought an automobile, they'll conclude he is either crazy or rich. Of course, he is neither. He is just an average American workman, enjoying the benefits of a production system that turns luxuries into commodities by creating an abundance of them.

Working under this system, the automobile industry is making it possible every year for more Americans to enjoy better cars. Its purchases stimulate business and employment all along the line. It employs directly a vast army of workers who earn enough themselves to be good customers for the products they make.

Westinghouse engineers have had no small part in building this system, which is founded largely upon the ability of machines to multiply the productive powers of men. Wherever you see machines and men at work, you are likely to see Westinghouse electric motors and control apparatus. Through the intelligent application of electricity to modern production problems, Westinghouse is helping the automobile industry — and every industry — to make America the constant envy of the entire world as a place to live and enjoy life.

Westinghouse

The name that means everything in electricity